

NIH Nutrition Research Report

Division of Nutrition Research
Coordination

2011 & 2012



National Institutes of Health
Turning Discovery Into Health

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NIH NUTRITION RESEARCH REPORT, 2011 & 2012

I. EXECUTIVE SUMMARY

This report was compiled by the National Institutes of Health (NIH) Division of Nutrition Research Coordination (DNRC), a trans-NIH office created in 1988 to advise the NIH Director and others on nutrition and physical activity research, training, and policy initiatives. The report summarizes NIH nutrition research activities in 2011 and 2012; financial information is provided for fiscal years (FY) rather than calendar years.

The total NIH investment in nutrition research was \$1.4 billion for 4,269 projects in FY 2011 and \$1.7 billion for 4,600 projects in FY 2012. The largest investments in nutrition research were made by NIDDK, NCI, and NHLBI, each spending over \$200 million in FY 2011 and FY 2012. Across all institutes and centers, the greatest numbers of projects were focused on prevention, obesity, and clinical research. A complete profile of NIH's nutrition research portfolio can be found by accessing the Human Nutrition Research and Information Management (HNRIM) system, a federal government-wide, online database created for the purpose of fiscal accounting, management, and monitoring of cross-agency human nutrition research activities. Over 150 new extramural grant programs with potential relevance to nutrition were made publicly available during FY 2011–2012 through Funding Opportunity Announcements (FOA)—otherwise known as program announcements, requests for applications, notices of funding availability, and solicitations.

During 2011 and 2012, the NIH issued over forty press releases related to nutrition science. Press releases included updates from clinical trials such as the Atherothrombosis Intervention in Metabolic Syndrome with Low HDL/High Triglycerides: Impact on Global Health (AIM-HIGH) trial, the Selenium and Vitamin E Cancer Prevention Trial (SELECT), and the Diabetes Prevention Program (DPP) as well as topics such as the microbiome, resveratrol, caffeine, vitamin E, and folate. During this time period, the NIH also sponsored over twenty nutrition-related scientific meetings, workshops, and symposiums. These events play a key role in the advancement of nutrition science by providing an opportunity to identify critical research gaps and to stimulate new areas of research.

Trans-NIH collaborations were critical to the development of numerous nutrition research initiatives undertaken during FY 2011–2012. One of the key facilitators of collaboration is the Nutrition Coordinating Committee (NCC), which operates out of the DNRC and is chaired by the Director of the DNRC. The NCC includes members from NIH institutes and centers and liaison representatives from NIH offices and other federal agencies. The NCC's monthly meetings provide an open forum for members to report on current and future nutrition research needs, policy activities, and research funding and training opportunities.

Other key trans-NIH collaborative efforts with relevance to the nutritional sciences in 2011–2012 included the NIH Obesity Research Task Force and the Common Fund, notably, the Human Microbiome Project and the Science of Behavior Change Program. The NIH Obesity Research Task Force is co-chaired by the Directors of NIDDK, NHLBI, and NICHD and, in 2011, published a new Strategic Plan for NIH Obesity Research.

The NIH also interacts with many federal partners in order to more effectively utilize resources and harmonize the federal nutrition research agenda. Examples of key collaborations include:

- The Biomarkers of Nutrition for Development (BOND) Program,
- Dietary Reference Intakes (DRI) scientific evidence review activities,
- The Evaluation of the Diet-Related Scientific Literature for Children from Birth to 24 Months,
- The Interagency Committee on Human Nutrition Research (ICHNR),
- The National Collaboration on Child Obesity Research (NCCOR),
- The National Food and Nutrient Analysis Program (NFNAP), and
- The Prevention Research Coordinating Committee (PRCC).

The DNRC provides leadership or participates regularly in each of these activities to help represent a broad and integrative trans-NIH perspective.

The NIH is committed to fostering innovative research and training to advance the field of nutrition science with the ultimate goal of protecting and improving health. Each institute and center plays an integral role in accomplishing this mission and has shared their research directions as they pertain to nutrition. The DNRC hopes this comprehensive report is not only informative but also serves to stimulate new ideas and discoveries.

ACKNOWLEDGMENTS:

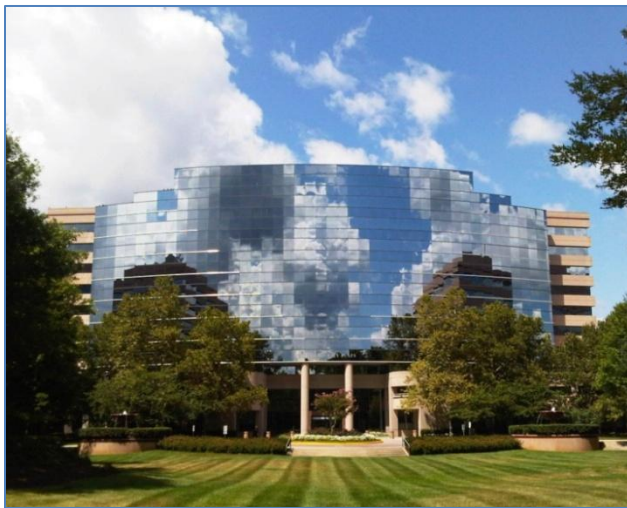
The DNRC would like to thank Cindy Clark, NIH Library Editing Service, for reviewing the report.

II. INTRODUCTION

The National Institutes of Health (NIH), part of the U.S. Department of Health and Human Services (DHHS), is the nation's medical research agency. The NIH supports biomedical research and training in nutrition as it relates to human development, health maintenance, disease prevention, and disease treatment. The NIH nutrition research program includes extramural and intramural research as well as research training. The major component of the program is extramural research, carried out at hundreds of institutions across the globe. Many of the research projects funded by NIH are based on ideas developed and submitted by individual investigators, principally from graduate science departments of nutrition, medicine, public health, and dentistry. Most of the intramural research is carried out in laboratories on the NIH campus in Bethesda, Maryland, and at the Warren Grant Magnuson Clinical Center, although several institutes and centers (ICs) also have off-campus programs located throughout the country.

Nutrition is a factor in many diseases and is an integral part of overall health, development, and wellbeing. As a result, research interests in the nutritional sciences extend far beyond those of a single institute. Biomedical nutrition research and training in 2011 and 2012 was supported by 20 NIH institutes, 3 Centers, and the Office of the Director (OD). The 2011 & 2012 Nutrition Research at the NIH Report, compiled by the DNRC, summarizes nutrition research and research training activities supported by the NIH during this period as well as specific research directions provided by each of the ICs supporting these activities.

III. THE DIVISION OF NUTRITION RESEARCH COORDINATION (DNRC)



The [Division of Nutrition Research Coordination \(DNRC\)](#) is a trans-NIH office created in 1988 to advise the NIH Director and others on nutrition and physical activity research, training, and policy initiatives. The mission of the DNRC is to coordinate nutrition-related research and training across the National Institutes of Health (NIH) and other HHS and non-HHS federal agencies. The DNRC traces its origins back to an NIH-wide forum—the [NIH Nutrition Coordinating Committee \(NCC\)](#), which was established in 1975 for the primary purpose of reviewing, discussing, and stimulating support for nutrition research

and training within the NIH. In the 1980s, mounting interest in an expanded NIH nutrition research agenda and the need for a coordinated and unified trans-NIH response on issues and documents related to nutrition research, research translation, and nutrition research training, as well as policy development, contributed to the creation of the DNRC in 1988 within which the NCC would continue to be an important function.

The DNRC's primary role has always been to facilitate communication and improve coordination within the NIH and other federal nutrition research communities. Today, DNRC staff contribute to the NIH and national nutrition research agendas by:

- identifying topics for investigation in the nutritional sciences;
- planning and conducting novel nutrition research;
- coordinating scientific and dietary guidance review activities within the NIH;
- engaging with federal partners on diverse nutritional science and public health topics pertaining to food labeling, food safety, obesity and energy balance, and disease prevention and health promotion initiatives including *Healthy People 2020*;
- maintaining a comprehensive, publicly accessible database of federally-funded nutrition research and research training activities known as the [Human Nutrition Research Information Management \(HNRIM\)](#) system;
- sponsoring, planning, and leading scientific conferences and workshops;
- disseminating NIH nutrition research and education materials; and
- playing a leadership role by engaging with NIH partners to promote NIH worksite health promotion and wellness.

Specific activities DNRC staff have contributed to can be found in [Appendix A](#).

IV. NIH NUTRITION RESEARCH AND FUNDING

Overview

This section of the report presents data and funding information on nutrition related research and training at NIH that occurred during Fiscal Years (FY) 2008–2012. The information is obtained from the Human Nutrition Research Information Management (HNRIM) system database and is based on grants, contracts, and other funding mechanisms used across the NIH.

NIH is the leader in federally supported nutrition research and training. In FY 2012, the NIH provided \$1.7 billion in financial support of nutrition research and training. This total represents the combined individual contributions of 20 NIH institutes, 3 centers, and the Office of the Director (OD) that supported biomedical nutrition research and training.

Human Nutrition Research Reporting

The [Human Nutrition Research and Information Management \(HNRIM\) system](#) is a federal government-wide, online database created for the purpose of fiscal accounting, management, and monitoring of cross-agency human nutrition research activities. The database was developed in response to a 1981 amendment to the [1977 National Agricultural Research, Extension, and Teaching Policy Act](#), and has been maintained by the NIH Division of Nutrition Research Coordination since that time.

HNRIM, which operates under the auspices of the Interagency Committee on Human Nutrition Research (ICHNR), has been operational since 1985. It includes data on nutrition research and training expenditures from federal agencies that sponsor nutrition research. Projects are selected for inclusion in the HNRIM system by the sponsoring agency, based on a common definition of human nutrition research agreed upon by the ICHNR. Projects are assigned nutrition classification codes compatible with the ICHNR definition of human nutrition research. The database is updated yearly by the reporting agencies through the HNRIM Program Director, NIH Division of Nutrition Research Coordination (DNRC).

Trends in Nutrition Research and Training

Congress requires NIH to report annual spending for over 200 research, condition, and disease categories, including nutrition. Historically, projects related to nutrition were identified by staff in each of the NIH Institutes and Centers. These projects were submitted for inclusion in HNRIM. In addition to identifying projects related to nutrition, staff assigned a percent nutrition-related score to each project and the nutrition spending was calculated accordingly (i.e., if a project was funded for \$100,000 and was categorized as 50% nutrition, \$50,000 would be included in a tally of nutrition funding).

However, at the request of Congress, the NIH embarked on a process to provide better consistency and transparency in the reporting of its funded research. Beginning with FY 2008, the NIH began using the [Research, Condition, and Disease Categorization \(RCDC\)](#) system to define over 200 categories, including nutrition, which the NIH reports annually to Congress and the public. RCDC uses sophisticated text data mining in conjunction with NIH-wide definitions used to match projects to research spending categories.

The definitions (fingerprints) are a list of terms and concepts selected by NIH scientific experts to define a research category. The NIH Nutrition Fingerprint is based on the ICHNR definition of nutrition, and was created by HNRIM staff working in conjunction with nutrition science experts representing many NIH institutes and centers. The Fingerprint is compared to each NIH-funded research project by searching titles, abstracts, and specific aims to generate a list of research projects which are nutrition related. As there is no reasonable way to assign a percent nutrition using the Nutrition Fingerprint, the dollars for all identified nutrition-related projects are counted as 100% nutrition. Research projects may meet the criteria of multiple fingerprints, and most nutrition projects are categorized under other spending categories as well. In other words, a project may be counted as nutrition, obesity, and prevention and it would be counted once in each category; therefore adding the number of projects, or dollars, in each category would far exceed the total number of projects.

Overall the RCDC process improves consistency and eliminates wide variability in defining the research categories reported. However, using the RCDC process substantially changes the way individual research projects are assigned to categories. As a result, it is difficult to make direct comparisons between trends in nutrition research spending prior to FY 2008 with those in FY 2008 and beyond.

Trends: FY 2008–2012

Actual obligations for nutrition research and training by NIH component during FY 2008–2012 are shown in Table 1. Across this 5-year interval, NIDDK, NHLBI, and NCI led NIH spending in nutrition related research. Cumulatively, nutrition spending by these three ICs accounted for more than half of all NIH nutrition-related expenditures in each year of this interval. The funding increase during FY 2009–2010 was primarily attributable to the short-term impact of the [American Recovery and Reinvestment Act \(ARRA\)](#). This legislation provided NIH with additional funding to help stimulate the U.S. economy through the support and advancement of scientific research. Increases in nutrition research support due to the availability of ARRA funds varied across ICs. ICs using ARRA funds to increase spending in nutrition research included NIDDK, NHLBI, NICHD, NIA, and NCCAM. The increase in nutrition funding in

FY 2012 (from 1.4 to 1.7 billion), was largely due to a major update of the Nutrition Fingerprint to capture botanical dietary supplements, intestinal microbiome, and other related projects that had been missed in previous years.

**Table 1. Funding for Nutrition Research and Training by NIH Component
FY 2008–2012 (ordered by FY 2008, largest to least, in thousands of dollars)^a**

Institute/ Center	2008	2009 ^d	2010 ^d	2011	2012 ^e
Total	1,391,500	1,597,892	1,643,520	1,411,263	1,692,018
NIDDK	382,935	458,168	494,049	422,867	517,288
NHLBI	214,015	259,853	239,863	216,893	236,207
NCI	196,678	206,310	201,725	205,636	286,701
NIA	76,568	88,739	88,795	80,713	92,876
NICHD	75,082	104,940	120,271	95,243	115,181
NIEHS	64,420	62,334	67,161	46,902	73,018
NCRR	53,450	44,226	39,313	27,789	-
OD ^b	56,139	56,950	65,186	46,485	50,495
NCCAM	38,030	44,731	45,243	26,819	31,757
NIAID	28,549	25,311	29,745	28,688	31,234
NIGMS	27,979	34,066	33,338	32,423	45,899
NIMH	27,329	29,651	32,284	27,271	31,665
NIMHD	21,901	22,502	23,230	23,790	25,040
NIAMS	16,998	19,475	21,653	17,349	17,788
NIDCD	18,626	22,471	20,832	18,340	22,968
NIAAA	18,552	23,487	24,274	22,104	25,647
NEI	15,681	15,792	21,733	11,153	11,282
NIDA	15,126	17,195	19,017	15,480	19,285
NINDS	14,300	25,876	22,581	14,842	25,008
NHGRI	9,697	13,029	9,417	11,102	9,621
NINR	8,693	11,468	9,784	8,719	8,717
NIDCR	8,045	8,933	9,371	9,835	10,516
NIBIB	1,586	1,122	703	199	792
FIC	1,044	1,129	1,065	621	1,163
NLM	76	137	2,886	-	-
NCATS ^c	-	-	-	-	1,868

^a Funding reported via HNRIM are not considered official NIH numbers.

^b Office of the Director (OD) includes Office of Disease Prevention, Office of Dietary Supplements, Office of Behavioral and Social Sciences Research, Office of Research on Women's Health, Office of Extramural Research, Office of Research Infrastructure Programs, and NIH Roadmap.

^c National Center for Advancing Translational Sciences (NCATS) was established in FY 2012.

^d Funding increase during FY 2009–2010 was primarily attributable to the short-term impact of the American Recovery and Reinvestment Act (ARRA).

^e The Nutrition Fingerprint was substantially updated to capture previously missed projects, including botanical dietary supplements and microbiome-related projects leading to an apparent funding increase in FY 2012.

Overall, total NIH obligations increased in the first three years of this period, followed by a small drop in FY 2011, before rising again in FY 2012. As a percentage of total NIH spending, nutrition constituted approximately 5% for this five-year period. In current (non-ARRA) dollars, nutrition remained essentially flat between FY 2008 and FY 2011. In FY 2012, the increased funding was largely due to a revision of the Nutrition Fingerprint to include related, but previously missed, projects. Table 2 also shows total NIH biomedical nutrition research and training support in constant, as well as current, dollars. For example, nutrition research and training support showed a \$300 million, or 21.6 percent, increase between FY 2008 and FY 2012 in current (unadjusted) dollars. In constant dollars (i.e., adjusted for inflationary price increases), nutrition research and training support in FY 2012 had increased 9.3 percent from the FY 2008 level.

Table 2. Actual Obligations, NIH Biomedical Nutrition Research and Training in Current and Constant Dollars and as a Percentage of Total NIH Obligations, FY 2008–2012 (in thousands of dollars)

Fiscal Year	Nutrition Research and Training, Current Dollars*	Nutrition Research and Training, Constant Dollars**	Total NIH Obligations+	Current Nutrition Dollars as a Percentage of Total NIH Obligations
2008	1,391,500	1,391,500	28,779,686	4.8%
2009	1,597,892	1,552,452	29,698,605	5.4%
2010	1,643,520	1,551,793	30,492,896	5.4%
2011	1,411,263	1,296,068	30,231,507	4.7%
2012	1,692,018	1,520,232	30,362,977	5.6%

* Expenditures. Source: Human Nutrition Research and Information Management (HNRIM) System. Funding reported via HNRIM is not considered official.

**Based on biomedical R&D price index, FY 2008 = 100 percent.

+ Total excludes obligations for National Library of Medicine and buildings and facilities.

Nutrition Research and Training Expenditures

Nutrition research and training expenditures for NIH institutes and centers (ICs) are shown in Table 3 as amounts and as percentages of their total obligation. Numbers of projects for each IC supporting nutrition research are also included. Leading the ICs in total dollars expended in support of nutrition research were NIDDK, NHLBI, and NCI, collectively accounting for over 60 percent of the total NIH nutrition-related spending. In terms of the proportion of total IC budget dedicated to nutrition, the three leading NIH components were NIDDK, NCCAM, and NIMHD with 27 percent, 26 percent, and 10 percent, respectively for FY 2012.

Table 3. NIH Nutrition Research Funding as a Percentage of Total IC Obligations and Number of Projects by NIH Component, FY 2012 (dollars in thousands)

Institute/ Center (IC)	Number of Projects	Nutrition Research and Training ^a	Total IC Obligations ^b	Nutrition as Percentage of Total IC Obligations
FIC	19	1,163	69,540	1.7%
NCATS	11	1,868	574,564	0.3%
NCCAM	116	31,757	127,924	24.8%
NCI ^c	585	286,701	5,067,342	5.7%
NEI	53	11,282	701,992	1.6%
NHGRI	10	9,621	512,700	1.9%
NHLBI	540	236,207	3,050,959	7.7%
NIA	276	92,876	1,121,340	8.3%
NIAAA	65	25,647	459,079	5.6%
NIAID	91	31,234	4,486,470	0.7%
NIAMS	67	17,788	535,200	3.3%
NIBIB	5	792	338,010	0.2%
NICHD	349	115,181	1,320,087	8.8%
NIDA	53	19,285	1,052,368	1.8%
NIDCD	78	22,968	415,835	5.5%
NIDCR	29	10,516	410,279	2.6%
NIDDK	1450	517,288	1,945,289	26.6%
NIEHS	157	73,018	763,737	9.6%
NIGMS	131	45,899	2,427,578	1.9%
NIMH	113	31,665	1,478,843	2.1%
NIMHD	77	25,040	276,144	9.1%
NINDS	74	25,008	1,624,786	1.5%
NINR	40	8,717	144,631	6.0%
OD ^d	211	50,495	1,458,280	3.5%
TOTAL^e	4,600^f	1,692,018	30,362,977	5.6%

a Source: Human Nutrition Research and Information Management (HNRIM) system database. Funding reported via HNRIM are not considered official NIH numbers.

b Source: NIH Office of Program Planning and Evaluation.

c NCI obligations include funds related to construction of Frederick facility which are not listed separately under buildings and facilities.

d Office of the Director (OD) includes Office of Disease Prevention, Office of Dietary Supplements, Office of Behavioral and Social Sciences Research, Office of Research on Women's Health, Office of Extramural Research, Office of Research Infrastructure Programs, SEPA, and NIH Roadmap/Common Fund.

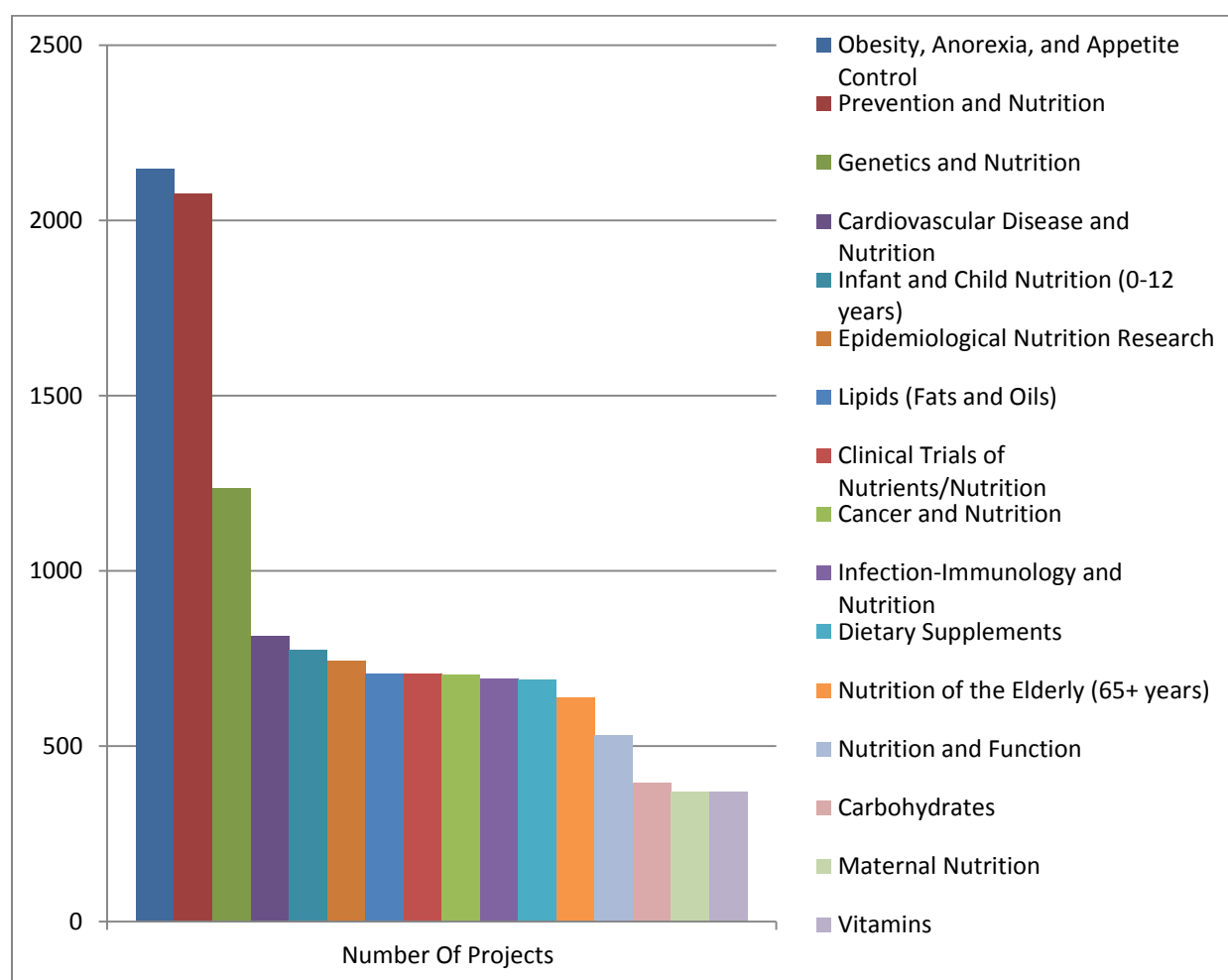
e Total excludes obligations for National Library of Medicine and buildings and facilities.

f Projects funded by multiple ICs are included in each IC project count, so the total of IC funded projects is greater than the number of discrete projects funded (4,304).

HNRIM System Categories and Interest Areas

Projects in HNRIM are assigned to one or more of the 43 classification categories by the funding IC or agency. (See <http://hnrnim.nih.gov/NutritionCodeDefinition.aspx#codes> for the complete list.) Although NIH nutrition research encompasses all of the classification categories, the largest component is concentrated in the area of Research in the Biomedical and Behavioral Sciences (codes 1–25 and 35–37). Frequently assigned nutrition classification codes are shown in Figure 1. Over half of the Nutrition projects are classified as Obesity or Prevention. Because a project may be assigned multiple classification codes, totaling coded projects would result in a number far exceeding the actual total number of projects.

Figure 1. Number of Projects for Selected HNRIM Code Categories, FY 2011^a

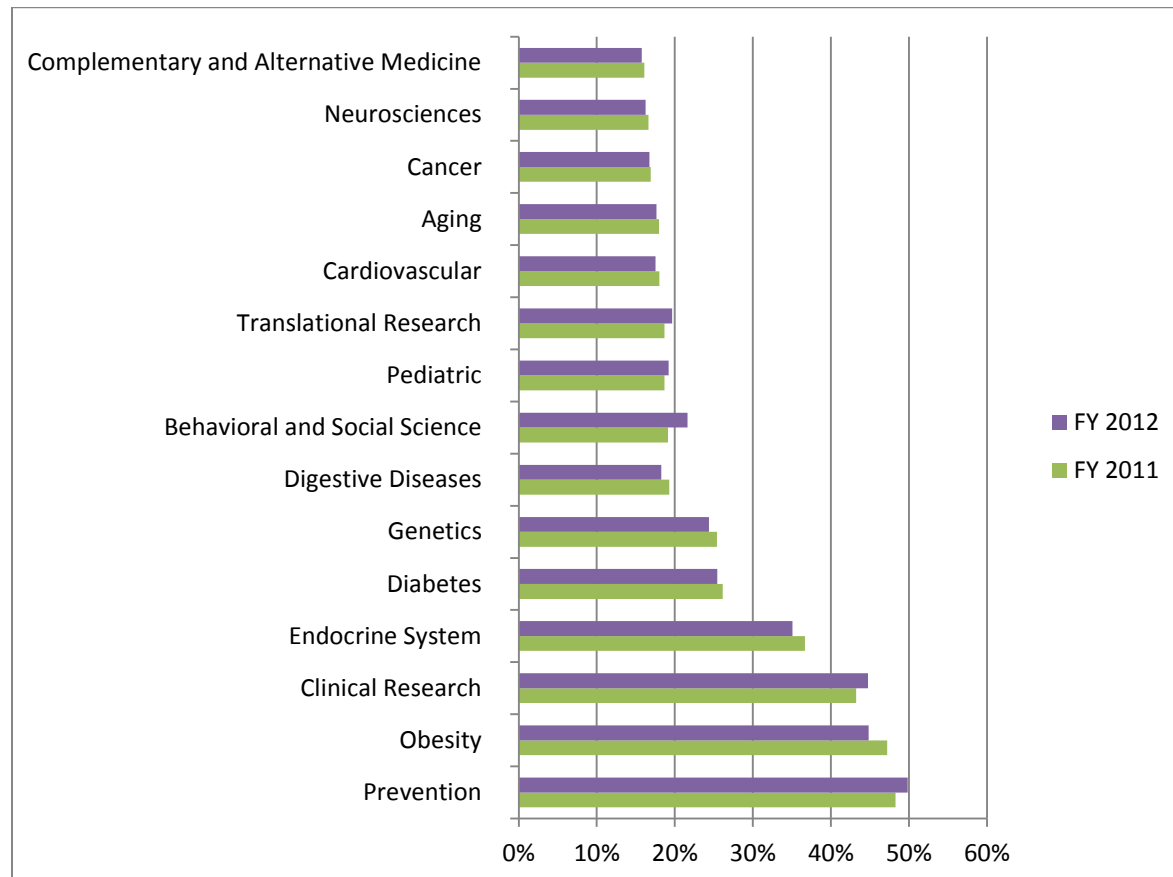


^a HNRIM coding for FY 2012 was not available when this report went to press.

Spending Categories

Just as a project may be assigned multiple HNRIM codes, NIH research projects may meet the criteria of multiple Fingerprints, and most Nutrition projects are categorized under other spending categories as well. Figure 2 shows other spending categories which appear most frequently in projects categorized as Nutrition. Half of the 4,304 Nutrition projects funded in FY 2012 were also categorized as Prevention and nearly half were categorized as Obesity or Clinical Research.

Figure 2. NIH Nutrition Top Overlapping RCDC Spending Categories as a Percent of Total Projects



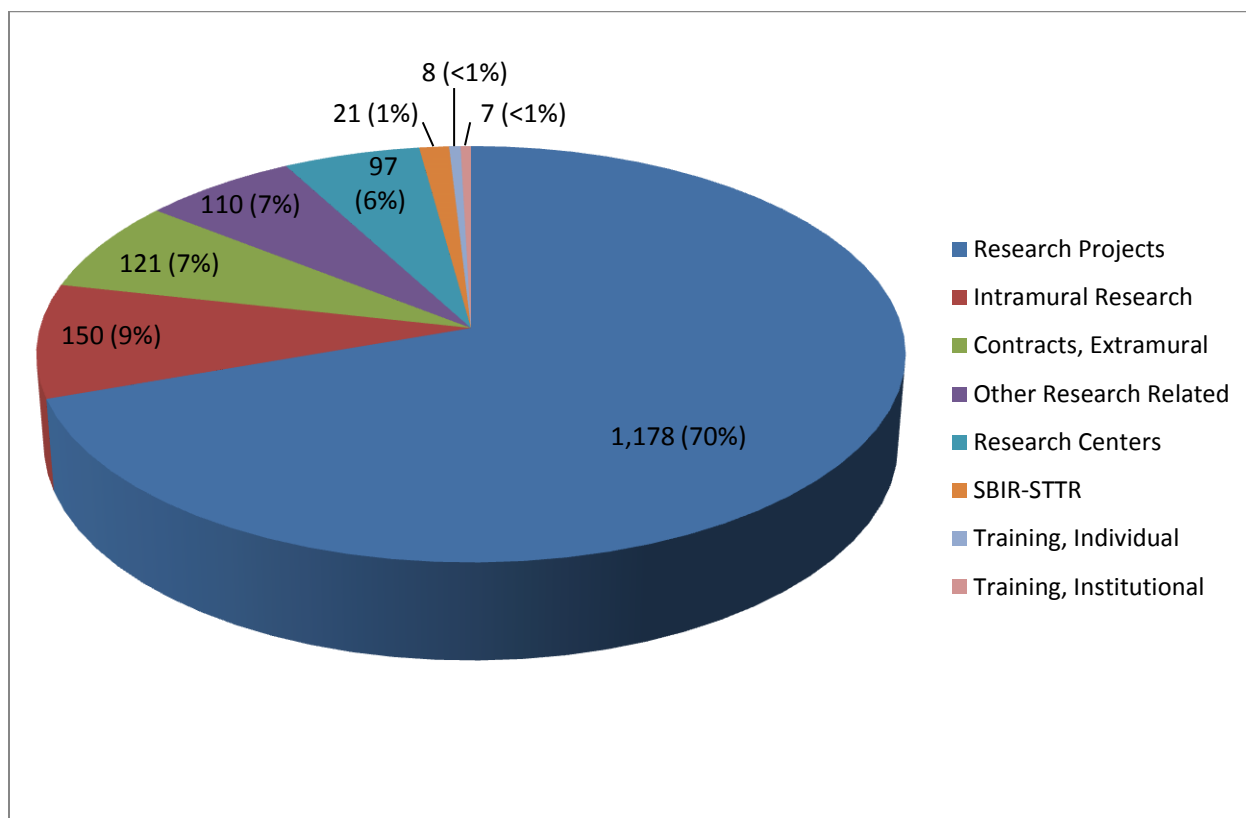
Support by Funding Mechanism

Figure 3 shows nutrition funding for intramural and extramural research; the latter displayed by discrete mechanisms. Extramural projects comprised a larger proportion of the nutrition research portfolio—about 91 percent—in FY 2012 (\$1.54 billion), than extramural projects generally across NIH ICs. The intramural program (\$150 million) made up the remaining 9 percent. Within the extramural category, Research Projects comprised the largest category of support, with \$1.18 billion (2,860 projects). Contracts comprised the second largest category of support, with \$121 million (62 projects). Other Research Related, including conferences and cooperative agreements, made up the third largest

category during this period, with \$110 million (559 projects). Centers ranked fourth, with \$97 million (325 projects).

The NIH supports extramural training in biomedical and behavioral nutrition research primarily through two basic mechanisms: institutional awards and individual awards. The institutional awards, commonly called “training grants,” are designed to enable institutions to make training awards to individuals selected by them for predoctoral and postdoctoral research training. In FY 2012, NIH spent \$7.3 million on training grants in nutrition. The predoctoral and postdoctoral individual awards are offered as either Fellowships or Career Awards to provide research training to individuals to broaden their scientific background and extend their potential for research. Expenditures for individual awards in nutrition were \$8.21 million in FY 2012.

Figure 3. Nutrition Funding by NIH Research Mechanism, FY 2012 (dollars in millions)



\$1.7 billion = total FY 2012 funding.

Research Solicitation

The *NIH Guide for Grants and Contracts*, which serves in lieu of the *Federal Register*, is the official publication for NIH medical and behavioral research grant policies, guidelines, and funding opportunities. The NIH Guide is also used by [NIH Contracting Offices](#) and other HHS agencies to announce their funding opportunities. For information on how to search the NIH Guide, see the [January 13, 2005 NIH Guide Notice](#).

The NIH considers applications for the support of basic or clinical biomedical, behavioral, and bioengineering research. New extramural grant programs are made publicly available through Funding Opportunity Announcements (FOA), otherwise known as program announcements, requests for applications, notices of funding availability, solicitations, or other names depending on the agency and type of program. In FY2011 and FY2012, 161 FOAs with potential relevance to nutrition were published in the *NIH Guide for Grants and Contracts*. They were identified through a key-word search using “nutrition.” See [Appendix B](#) for the full list. Dates and name of the issuing organization are also provided.

NIH Nutrition Research in the News

NIH-supported nutrition research led to a number of important discoveries in 2011 and 2012. Many of these discoveries were announced in an [NIH News Release](#). A sample of these news items are listed by general topic below, and a full list of all nutrition-related press releases issued by NIH in 2011 and 2012 can be found in [Table 4](#).

Highlights from NIH News Releases

Cancer

- Men who took 400 international units (I.U.) of vitamin E daily had more prostate cancers compared to men who took a placebo, according to an updated review of data from the Selenium and Vitamin E Cancer Prevention Trial (SELECT). <http://www.nih.gov/news/health/oct2011/nci-11.htm>

Cardiovascular Disease

- A study, supported in part by the National Heart, Lung, and Blood Institute (NHLBI), suggests that a combination of mobile technology and remote coaching holds promise in encouraging healthier eating and physical activity behavior in adults, which is important for cardiovascular health. <http://www.nih.gov/news/health/may2012/nhlbi-30.htm>
- The AIM-HIGH (Atherothrombosis Intervention in Metabolic Syndrome with Low HDL/High Triglycerides: Impact on Global Health) trial found that adding high dose, extended-release niacin to statin treatment in people with heart and vascular disease did not reduce the risk of cardiovascular events, including heart attacks and stroke. The trial was stopped 18 months earlier than planned. <http://www.nih.gov/news/health/may2011/nhlbi-26.htm>
- As part of the Cardiovascular Lifetime Risk Pooling Project, investigators analyzed 50 years of data from 18 existing cohort, or population-based, studies in the United States. Researchers found that middle-aged adults who have one or more elevated traditional risk factors for CVD, such as high blood pressure, have a substantially greater chance of having a major CVD event, such as heart attack or stroke, during their remaining lifetime than people with optimal levels of risk factors. <http://www.nih.gov/news/health/jan2012/nhlbi-25.htm>

Diabetes

- The Look AHEAD (Action for Health in Diabetes) study tested whether a lifestyle intervention resulting in weight loss would reduce rates of heart disease, stroke, and cardiovascular-related deaths in overweight and obese people with type 2 diabetes, a group at increased risk for these events. The study found weight loss had many positive health benefits for people with type 2 diabetes, but it did not reduce the number of cardiovascular events. <http://www.nih.gov/news/health/oct2012/niddk-19.htm>

- New research through the Diabetes Prevention Program (DPP) clinical trial has shown that a lifestyle intervention (reduced fat and calories in the diet and increased physical activity) or the use of the diabetes medication metformin reduced the rate of type 2 diabetes in high-risk adults, compared with placebo. Both interventions are cost effective ways to improve health and improve the quality of life in people at high risk for the disease. <http://www.nih.gov/news/health/mar2012/niddk-22.htm>
- Utilizing data from the Nurse's Health Study II, researchers found that women who consumed a diet high in animal fat and cholesterol before pregnancy were at higher risk for gestational diabetes than women whose diets were lower in animal fat and cholesterol. <http://www.nih.gov/news/health/jan2012/nichd-25.htm>

Diet

- Scientists have found that calorie restriction—a diet comprised of approximately 30 percent fewer calories but with the same nutrients of a standard diet—does not extend years of life or reduce age-related deaths in a 23-year study of rhesus monkeys. However, calorie restriction did extend certain aspects of health. <http://www.nih.gov/news/health/aug2012/nia-29.htm>
- In a NIDCD-funded study, investigators found that babies with an early exposure to starchy, salty foods will develop a greater preference for salty foods by as early as six months of age, compared to infants who have not been given salty food. This taste preference was shown to last into the preschool years and could potentially influence taste preferences in adults. <http://www.nih.gov/news/health/dec2011/nidcd-20.htm>
- Older adults who drank coffee—caffeinated or decaffeinated—had a lower risk of death overall than others who did not drink coffee, according to researchers who examined the association between coffee drinking and risk of death in 400,000 U.S. men and women ages 50 to 71 who participated in the NIH-AARP Diet and Health Study. <http://www.nih.gov/news/health/may2012/nci-16.htm>

Microbiome

- The Human Microbiome Project (HMP), a consortium of researchers organized by the National Institutes of Health, has mapped the normal microbial makeup of healthy humans. Researchers calculate that they have identified between 81 and 99 percent of all microorganismal genera in healthy adults. The bacterial genomic contribution is critical for human survival. Genes carried by bacteria in the gastro-intestinal tract, for example, allow humans to digest foods and absorb nutrients that otherwise would be unavailable. To define the normal human microbiome, HMP researchers sampled 242 healthy U.S. volunteers (129 male, 113 female), collecting tissues from 15 body sites in men and 18 body sites in women. <http://www.nih.gov/news/health/jun2012/nhgri-13.htm>

Nutritional Status

- NIH has undertaken a new program to discover, develop, and distribute measures of nutritional status. The Biomarkers of Nutrition for Development (BOND) Program seeks to identify nutritional biomarkers—substances that indicate how much of a nutrient a person has eaten and how the body is using that nutrient. The BOND Program is a partnership involving the NIH and support from the Bill and Melinda Gates Foundation, European Micronutrient Recommendations Aligned, the Micronutrient Genomics Project, and PepsiCo. The BOND Program also involves collaborations with numerous U.S. and global health agencies and private organizations.
<http://www.nih.gov/news/health/jul2011/nichd-06.htm>

Obesity

- The NIH Obesity Task Force released a new strategic plan for NIH obesity research. It identifies research opportunities toward the development of effective strategies to reduce the prevalence of obesity and related health consequences. The plan emphasizes moving science from the laboratory to clinical trials to practical solutions. <http://www.nih.gov/news/health/mar2011/niddk-31.htm>
- The HBO cable network, in consultation with NIH and other major health organizations, developed The Weight of the Nation documentary series and public awareness campaign. The project includes four documentaries as well as a three-part HBO Family series for kids, 12 short features, a social media campaign, and a nationwide community-based campaign to mobilize action to move the country to a healthier weight. <http://www.nih.gov/news/health/apr2012/niddk-30.htm>
- NIH researchers created a mathematical model—and an accompanying online weight simulation tool—of what happens when people of varying weights, diets, and exercise habits try to change their weight. The computer simulation of metabolism is meant as a research tool and not as a weight-loss guide for the public. <http://www.nih.gov/news/health/aug2011/niddk-25.htm>

Table 4: 2011 & 2012 NIH Nutrition-Related News Releases

Date	Research Press Release Title
March 31, 2011	New strategic plan for NIH obesity research seeks to curb epidemic
April 13, 2011	Complementary and alternative medicine dialogue lacking between patients, providers
April 26, 2011	NIH launches Web resource on complementary and alternative medicine
April 27, 2011	Vitamin E helps diminish a type of fatty liver disease in children
May 26, 2011	NIH stops clinical trial on combination cholesterol treatment

June 8, 2011	NIH study addresses concerns about high folate levels
June 9, 2011	Potential new target for smoking cessation without weight gain
July 5, 2011	NIH findings in mice have potential to curb obesity and type 2 diabetes
July 6, 2011	NIH effort seeks to identify measures of nutritional status
July 11, 2011	Receptor limits the rewarding effects of food and cocaine
July 21, 2011	Zinc ‘sparks’ fly from egg within minutes of fertilization
August 18, 2011	Compound improves health, increases lifespan of obese mice
August 23, 2011	Study links low DHA levels to suicide risk among U.S. military personnel
August 25, 2011	Protein linked to Parkinson’s disease may regulate fat metabolism
August 25, 2011	NIH research model predicts weight with varying diet, exercise changes
August 30, 2011	Gene replacement treats copper deficiency disorder in mice
September 27, 2011	Saw palmetto no more effective than placebo for urinary symptoms
October 11, 2011	NIH-funded study shows increased prostate cancer risk from vitamin E supplements
October 13, 2011	Inefficient developing world stoves contribute to 2 million deaths a year
November 21, 2011	Cholesterol levels elevated in toddlers taking anti-HIV drugs
December 20, 2011	Early dietary experience shapes salt preference of infants and preschoolers
January 25, 2012	Elevated risk factors linked to major cardiovascular disease events across a lifetime
January 25, 2012	High animal fat diet increases gestational diabetes risk
January 26, 2012	New NIH fact sheet explains test for diabetes, prediabetes
January 26, 2012	NIH Study shows caffeine consumption linked to estrogen changes
February 2, 2012	NIH study uncovers probable mechanism underlying resveratrol activity

March 1, 2012	Vitamin D shrinks fibroid tumors in rats
March 6, 2012	NIH launches consumer-friendly tips series on complementary health practices
March 22, 2012	NIH study finds interventions to prevent type 2 diabetes give good return on investment
March 23, 2012	NIH launches online resource on behavioral and social science research methods
March 28, 2012	Weight loss and increased fitness slow decline of mobility in adults
April 30, 2012	NIH research featured in HBO documentary series on obesity
May 16, 2012	NIH study finds that coffee drinkers have lower risk of death
May 30, 2012	NIH-funded study examines use of mobile technology to improve diet and activity behavior
June 13, 2012	NIH Human Microbiome Project defines normal bacterial makeup of the body
June 18, 2012	Weight-loss surgery increases alcohol use disorders over time
July 18, 2012	Oral immunotherapy shows promise as treatment for egg allergy
August 29, 2012	NIH study finds calorie restriction does not affect survival
October 9, 2012	After diabetes during pregnancy, healthy diet linked to reduced type 2 diabetes risk
October 15, 2012	"Biggest Loser" study finds modest diet and exercise can sustain weight loss
October 19, 2012	Weight loss does not lower heart disease risk from type 2 diabetes
October 22, 2012	NIH videos demonstrate behavior's role in personal health

Source: NIH News Release Archive (<http://www.nih.gov/news/health/>)

V. NIH-SPONSORED NUTRITION CONFERENCES, SCIENTIFIC MEETINGS, VIDEOCASTS, & PRACTICUMS

List of NIH-sponsored Conferences and Symposiums

NIH conferences and workshops play a key role in the advancement of nutrition science. Such forums provide an opportunity to identify critical research gaps and to stimulate new areas of research. In 2011 and 2012, a variety of nutrition- and physical activity-related events were sponsored or co-sponsored by NIH Institutes and Centers. While many of the meetings listed below were organized through important collaborations with other federal agencies, non-government organizations, and industry, only the NIH sponsored are listed. Events are listed in chronological order.

- **Communicating Nutrition Messages: Strategies for Diverse Audiences**
March 4, 2011–Bethesda, MD
NIH Sponsor(s): Division of Nutrition Research Coordination, NIH
<http://videocast.nih.gov/Summary.asp?File=16616>
- **Cancer Prevention Begins at Home: The Role of Parents**
September 12, 2011–Bethesda, MD
NIH Sponsor(s): National Cancer Institute
- **Food Forum Meeting on Informing Health & Food Policy through Systematic Evidence-Based Reviews**
September 15, 2011–Washington, D.C.
NIH Sponsor(s): Division of Nutrition Research Coordination, National Cancer Institute, and the Office of Dietary Supplements
<http://www.iom.edu/Activities/Nutrition/FoodForum/2011-SEP-15.aspx>
- **Biomarkers of Nutrition for Development (BOND) Program: Iodine Consultation**
September 26-27, 2011–Rockville, MD
NIH Sponsor(s): Division of Nutrition Research Coordination, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, and the Office of Dietary Supplements
http://www.nichd.nih.gov/global_nutrition/programs/bond/
- **Aging in the Community**
October 5-6, 2011–Washington, D.C.
NIH Sponsor(s): Division of Nutrition Research Coordination and the Office of Dietary Supplements
<http://iom.edu/Activities/Nutrition/NutritionAgingCommunity/2011-OCT-05.aspx>
- **Building Public-Private Partnerships in Food and Nutrition**
November 1-2, 2011–Washington, D.C.
NIH Sponsor(s): Division of Nutrition Research Coordination, National Cancer Institute, and the Office of Dietary Supplements
http://books.nap.edu/openbook.php?record_id=13412&page=R1

- **Biomarkers of Nutrition for Development (BOND) Program: Vitamin A Consultation**
November 17-18, 2011–Rockville, MD
NIH Sponsor(s): Division of Nutrition Research Coordination, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, and the Office of Dietary Supplements
http://www.nichd.nih.gov/global_nutrition/programs/bond/
- **Joint NIH and USDA Workshop on Using Nanotechnology to Improve Nutrition through Enhanced Bioavailability and Efficacy**
November 29-30, 2011–Bethesda, MD
NIH Sponsor(s): Division of Nutrition Research Coordination, National Cancer Institute, National Center for Complementary and Alternative Medicine, National Institute of Biomedical Imaging and Bioengineering, and the Office of Dietary Supplements
<http://prevention.cancer.gov/news-events/events/20111129>
- **Motivating Individuals to Achieve Sustained Healthful Diet and Physical Activity Behaviors: A Stakeholder Dialogue**
January 10, 2012–Washington, D.C.
NIH Sponsor (s): Division of Nutrition Research Coordination
- **Farm-to-Fork Workshop on Surveillance of the U.S. Food System**
January 25-26, 2012–Washington, D.C.
NIH Sponsors(s): National Collaborative on Childhood Obesity Research (NCCOR), of which NIH is a funding partner
- **A Workshop on the Human Microbiome, Diet, and Health**
February 22, 2012–Washington, D.C.
NIH Sponsor(s): Division of Nutrition Research Coordination, National Cancer Institute, and the Office of Dietary Supplements
<http://www.iom.edu/Activities/Nutrition/FoodForum/2012-FEB-12.aspx>
- **NIH Conference on Phenylketonuria (PKU) Research Advances**
February 22-23, 2012–Bethesda, MD
NIH Sponsor(s): *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, Office of Rare Diseases Research, and the Office of Dietary Supplements
https://www.team-share.net/Phenylketonuria_Scientific_Review_Conference/Overview.aspx
- **Dietary Sodium: Recommendations, Evidence, Challenges, and Applications for Clinical Guidance**
March 9, 2012–Bethesda, MD
NIH Sponsor(s): Division of Nutrition Research Coordination
<http://www.dnrc.nih.gov/dietarySodium.asp>
- **The Youth Energy Expenditure (YEE) Workshop**
April 19-20, 2012–Atlanta, GA
NIH Sponsors(s): National Cancer Institute and the National Collaborative on Childhood Obesity Research (NCCOR), of which NIH is a funding partner
http://nccor.org/downloads/YEE_full%20summary%20FINAL.pdf

- **The Future of Performance Standards in Food Safety: Innovation Ahead?**
 June 5, 2012–Washington, D.C.
 NIH Sponsor(s): Division of Nutrition Research Coordination, National Cancer Institute, and the Office of Dietary Supplements
<http://www.iom.edu/Activities/Nutrition/FoodForum/2012-JUN-12.aspx>
- **Human Performance and Dietary Supplements Summit**
 August 9-10, 2012–Bethesda, MD
 NIH Sponsor(s): Office of Dietary Supplements
 contact: ods@nih.gov
- **Future Directions For Implementing Nutrition Across the Continuum of Medical and Health Professions Education and Training, and Research**
 September 10-11, 2012–Bethesda, MD
 NIH Sponsor(s): Division of Nutrition Research Coordination, National Heart, Lung, and Blood Institute, and the Office of Disease Prevention
<http://www.nhlbi.nih.gov/resources/docs/index.htm>
- **2012 Mid-Atlantic Diabetes Research Symposium**
 September, 28, 2012–Bethesda, MD
 NIH Sponsor(s): National Institute of Diabetes and Digestive and Kidney Diseases
<http://www2.niddk.nih.gov/News/Calendar/midatlantic2012.htm>
- **NIH/NIDDK International Conference on Diabetes and Depression**
 October 9-10, 2012–Herndon, VA
 NIH Sponsor(s): National Institute of Diabetes and Digestive and Kidney Diseases
<http://www2.niddk.nih.gov/News/Calendar/DiabetesDepression12.htm>
- **Evaluating the Diet-Related Scientific Literature for Children from Birth to 24 Months “All Hands” Meeting**
 October 15-16, 2012–Bethesda, MD
 NIH Sponsor(s): Division of Nutrition Research Coordination, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, and the National Heart, Lung, and Blood Institute
- **NIH/NIDDK Clinical Research Strategies for Fructose Metabolism.**
 November 13-14, 2012–Bethesda, MD
 NIH Sponsor(s): National Institute of Diabetes and Digestive and Kidney Diseases
<http://www2.niddk.nih.gov/News/Calendar/FructoseMetab2012.htm>
- **Inflammation and Nutritional Science for Programs/Policies: Interpretation of Research Evidence (INSPIRE)**
 November 28-30, 2012–Bethesda, MD
 NIH Sponsor(s): Division of Nutrition Research Coordination, *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, National Institute of Allergy and Infectious Diseases, and the Office of Dietary Supplements

- **Physical Activity and Disease Prevention Workshop: Identifying Research Priorities**
December 13-14, 2012–Bethesda, MD
NIH Sponsor(s): Office of Disease Prevention
http://prevention.nih.gov/workshops/2012/physical_activity/default.aspx
- **2012 Science of Eliminating Health Disparities Summit**
December 17-19, 2012–National Harbor, MD
NIH Sponsor(s): National Institute on Minority Health and Health Disparities
http://www.nimhd.nih.gov/summit_site/about.html

List of Archived NIH Nutrition Webinars & Videocasts

Many NIH-sponsored scientific meetings or lectures related to nutrition, primarily those held on the NIH campus, have been archived with access provided through the [NIH VideoCasting and Podcasting](#) Web site. The full list can be found below.

- **Joint NIH and USDA Workshop on Using Nanotechnology To Improve Nutrition Through Enhanced Bioavailability and Efficacy**
[Day 1 of conference](#)
[Day 2 of conference](#)
November 29-30, 2011
NIH Sponsor(s): Division of Nutrition Research Coordination, National Cancer Institute, National Center for Complementary and Alternative Medicine, National Institute of Biomedical Imaging and Bioengineering, and the Office of Dietary Supplements
- [Communicating Nutrition Messages: Strategies for Diverse Audiences](#)
March 4, 2011
NIH Sponsor(s): Division of Nutrition Research Coordination
- [False Positives, False Negatives, and Small Effects: Genome, Exposome, and Nutrition](#)
March 15, 2011
NIH Sponsor(s): National Cancer Institute
- [Dietary Supplements—What You Need to Know](#)
March 16, 2011
NIH Sponsor(s): Office of Research Services
- Frontiers in Nutrition and Cancer Prevention: Online CME Series—[Is Curcumin the Spice of Life? A Look at Cancer Prevention Evidence](#)
May 17, 2011
NIH Sponsor(s): National Cancer Institute
Note: webinar available at <http://dcp.cancer.gov/programs-resources/groups/ns/webinars/20110517/>
- Frontiers in Nutrition and Cancer Prevention: Online CME Series—[Vitamin D and Cancer Prevention: Shining Light on the Current Research](#)
December 2, 2011
NIH Sponsor(s): National Cancer Institute
Note: webinar available at <http://prevention.cancer.gov/programs-resources/groups/ns/webinars/20111202/>
- [Food for Thought: Mainstreaming Nutrition to Improve Child Health](#)
February 16, 2012
NIH Sponsor(s): *Eunice Kennedy Shriver* National Institute of Child Health and Human Development

- [Dietary Sodium: Recommendations, Evidence, Challenges, and Applications for Clinical Guidance](#)
March 9, 2012
NIH Sponsor(s): Division of Nutrition Research Coordination
- [Novel Omega-3 Mediators & Mechanisms in the Resolution of Inflammation: What Can They Tell us About Preventive and Therapeutic Approaches?](#)
March 13, 2012
NIH Sponsor(s): National Cancer Institute
- [Promoting Equity through Engagement: Novel Strategies to Transform Communities into Epicenters of Health](#)
March 15, 2012
NIH Sponsor(s): National Institute on Minority Health and Health Disparities
- [Easy Tips on How to Reduce the Sodium in Your Favorite Recipes](#)
March 15, 2012
NIH Sponsor(s): Division of Nutrition Research Coordination, Eurest Dining Services, Office of Research Services, and the NIH Recreation & Welfare Association
- [2012 Annual Advances in Cancer Prevention Lecture—Diet and Cancer: The Fourth Paradigm](#)
July 25, 2012
NIH Sponsor(s): National Cancer Institute

List of NIH-sponsored Nutrition Training Practicums

NIH supports many innovative training programs that foster scientific creativity and exploration. The NIH nutrition community sponsors several multi-day practicums with the hopes of providing a rich learning experience that will inspire a passion for science in current and future generations of researchers.

- **Nutrition and Cancer Prevention Research Practicum**

The Nutritional Science Research Group in the Division of Cancer Prevention at the National Cancer Institute and the Department of Nutrition at the Clinical Center, National Institutes of Health, offer a yearly one-week educational opportunity in "Nutrition and Cancer Prevention Research" for individuals with a sustained commitment to nutrition and health promotion. This one-week intense learning session provides specialized instruction in the role of diet and bioactive food components as modifiers of cancer incidence and tumor behavior. The practicum includes tours of the NIH Hatfield Clinical Research Center and the Metabolic Kitchen at USDA.

[2011 Practicum Dates](#): March 14 -18, 2011

[2012 Practicum Dates](#): March 12-16, 2012

- **The Mary Frances Picciano Dietary Supplement Research Practicum**

The Office of Dietary Supplements (ODS) offers a four-day educational opportunity during the summer to provide fundamental knowledge of dietary supplements to faculty, students, and practitioners with a serious interest in this subject. This intensive practicum provides a thorough overview and grounding about issues, concepts, unknowns, and controversies surrounding dietary supplements and supplement ingredients. It also emphasizes the importance of scientific investigations to evaluate the efficacy, safety, and value of these products for health promotion and disease prevention, as well as how to carry out this type of research.

Website: <http://odspracticum.od.nih.gov/>

VI. TRANS-NIH COMMITTEES, WORKING GROUPS, AND INTEREST GROUPS RELATED TO NUTRITION

Many collaborative efforts take place at NIH that facilitate the sharing of resources, expertise, and communication within the NIH nutrition scientific community. The list below identifies several of the key groups with representation from across NIH.

Behavioral and Social Sciences Interest Group (BSSR-IG): The Behavioral and Social Sciences Research Interest Group (BSSR-IG) was organized in recognition of the centrality of behavioral and social science research to the NIH mission, as well as the need to provide opportunities for collaboration and exchanges of information across ICs and between intramural and extramural behavioral and social scientists. The BSSR-IG's organizational meetings held in December 1995 and February 1996 resulted in its formation. The interest group functions mainly through its listserv and the BSSR lecture series. The NIH Behavioral and Social Sciences Research Coordinating Committee initiated the formation of this interest group, under the sponsorship of the [NIH Office of Behavioral and Social Sciences Research](#).

Common Fund: The NIH Common Fund was enacted into law by Congress through the 2006 NIH Reform Act to support cross-cutting, trans-NIH programs that require participation by at least two NIH institutes or centers (ICs) or would otherwise benefit from strategic planning and coordination. The Common Fund initiative was developed as a means of supporting priority research initiatives and fostering collaborations across the NIH ICs. The Common Fund has been used to support a series of short term, high impact, trans-NIH programs known collectively as the *NIH Roadmap for Medical Research*. The Common Fund is coordinated by the NIH Office of Strategic Coordination, one of the six offices of the Division of Program Coordination, Planning, and Strategic Initiatives (DPCPSI) within the Office of the Director. Two Common Fund initiatives of relevance to the nutrition community are the [Human Microbiome Project](#) and the [Science of Behavior Change Program](#).

The Human Microbiome Project is a \$157 million, five-year effort launched in 2008. The project is expected to increase our understanding of the function of the human microbiome in health and disease, potentially leading to new strategies and therapies to improve health. The Science of Behavior Change program was developed to improve our understanding of the mechanisms of initiating and maintaining behavior change across a range of health-related behaviors. The behavior science projects bridge laboratory and field-based research activities and are intended to stimulate investigations of basic mechanisms at the social, contextual, behavioral, psychological, neurobiological, or genetic levels of analysis.

Epidemiology and Clinical Trials Interest Group: The purpose of this group is to provide the diverse community of NIH scientists in epidemiology, biometry, and related fields with a means for: maintaining a strong alliance within the NIH epidemiology community to respond to inter-institute issues regarding epidemiology, biometry, and clinical trials; discussing research-related, professional, and administrative issues of mutual interest; keeping abreast of their colleagues' latest research findings and methodological developments; drawing attention to the significant contributions of epidemiology,

biometry, and clinical trials to recent advances in biomedical knowledge; and interacting with distinguished scientists in epidemiology, biometry, and clinical trials outside of NIH.

Exercise Interest Group: Formed in January 2012, the NIH Exercise Interest Group (EIG) provides a forum where researchers, clinicians, and other interested persons from NIH and the extramural community can explore and promote epidemiological, clinical, and basic research on the effects of exercise in prevention and treatment of disease and disability. Specific goals of the EIG include, but are not limited to, stimulating NIH collaborations to develop innovative research programs and initiatives investigating the effects of habitual exercise in clinical medicine; stimulating interest from the outside scientific community to submit research applications to NIH investigating the effects of exercise in prevention and treatment of disease and disability; maintaining a contemporary list of experts in exercise science to serve as potential NIH study section members and *ad hoc* grant reviewers; providing a forum for outside organizations with expertise in exercise science to provide input and feedback to NIH regarding important issues in this area; and providing a forum for developing educational programs and lectures in exercise science for individuals in the metropolitan Washington, D.C. area.

Metabolomics Scientific Interest Group: Metabolomics is the study of the metabolome, the repertoire of metabolites, or small molecules present in cells, tissue, and body fluids. The Metabolomics Scientific Interest Group was created to help stimulate interest in the field of metabolomics and aims to bring interested NIH program officials and intramural investigators together. The group meets periodically to discuss recent advances and hear from invited experts.

mHealth Inter-Institute Interest Group (mHealth IIG): Mobile health, also known as “mHealth,” includes wireless devices and sensors (including cellular phones) that are intended to be carried on the person throughout the day (i.e., during normal daily activities) to assess or improve health functioning. This also includes mobile diagnostic devices and decision support tools, which travel with care providers and that transmit data wirelessly. The mHealth IIG was formed in 2010 to provide a forum to exchange information about mHealth methodology, research, and research applications in diverse settings. The NIH mHealth IIG also seeks to identify future research needs and potential collaborations, and the group has sponsored mHealth research training opportunities for new investigators working in the field.

Nutrition Coordinating Committee (NCC): The NIH Nutrition Coordinating Committee (NCC) was established in 1975 for the primary purpose of reviewing, discussing, and stimulating support for nutrition research and training within the NIH. The NCC is a significant activity within the NIH Division of Nutrition Research Coordination. Today, the NCC is a vibrant group whose membership includes representatives from NIH institutes and centers and liaison representatives from NIH Offices and federal agencies ([Appendix C](#)). NCC meetings occur monthly and typically include scientific seminars, nutrition research program and policy updates, research interest and collaborative project activities, and national and international conference and workshop updates. The NCC has a number of active subcommittees that are listed below:

- **NIH Nutrition Education Subcommittee (NES):** The NIH Nutrition Education Subcommittee (NES), a subcommittee of the NIH Nutrition Coordinating Committee, reviews nutrition education materials that contain dietary guidance for the general population. A Congressional

mandate for reviews of these materials was enacted in 1990 to ensure that nutrition education materials produced by Federal agencies are consistent with the *Dietary Guidelines for Americans* and that all agencies within the U.S. Departments of Health and Human Services (DHHS) and Agriculture (USDA) are consistent in regard to nutrition information and advice. DNRC staff provide leadership for this subcommittee. The NES reviews nutrition education materials in several formats including print and electronic media such as brochures and fact sheets, web pages, videos, and audio format messages that are intended for the general public. Information materials and resources that are intended for nutrition or medical professionals, or intended for use in treating patients (i.e., materials that might be given to a patient from a physician or a dietitian), and materials that are regulatory in nature (e.g., FDA regulations) are excluded from NES reviews. However, DNRC staff often work with the originating Institute or agency to provide informal comments on these latter types of documents. These comments are felt to be constructive and are subsequently incorporated in these documents. A list of all materials formally reviewed by the NES in 2011/2012 can be found in [Appendix D](#).

- **Probiotic and Prebiotic Working Group (PPWG):** Formed in 2006, PPWG is a trans-NIH effort. The group began as a subgroup of the Division of Nutrition Research Coordination's Nutrition Coordinating Committee to identify gaps and challenges in prebiotic and probiotic research. The goals of the PPWG are to:
 - promote trans-agency collaborations in advancing evidence base of probiotics and prebiotics; and
 - advance probiotic and prebiotic research and a deeper understanding of the role of gut microbes in human health.

In order to achieve these goals, the working group strives to promote constructive interactions across NIH institutes, centers, and offices. The PPWG also disseminates real-time information to keep members abreast of current and future activities occurring in the fields of probiotics and prebiotics.

- **Subcommittee on International Nutrition Research (SCINR):** The SCINR was formed in 2002 to address concerns related to both under- and over-nutrition in the global community. In 2011, the SCINR focused on forming a partnership with USAID, potentially through a collaborating center with the World Health Organization (WHO). This center would be well-positioned to lead coordinated efforts on topics of critical importance to the global community, including the first 1000 days, which is a focal point for WHO. In addition, the SCINR worked to re-establish the Micronutrient Forum, originally created in 2006 to reflect scientific and programmatic evolution in the field of micronutrients.

Obesity Research Task Force: The NIH Obesity Research Task Force was formed to provide the NIH research community with a means of exchanging information on a broad spectrum of NIH obesity-related research including molecular, genetic, behavioral, environmental, clinical, and epidemiologic

studies. The Task Force is co-chaired by the Directors of the NIDDK, NHLBI, and NICHD. The members of the Task Force include representatives from these and many other NIH ICs. In 2011, the Task Force published a new [Strategic Plan for NIH Obesity Research](#) to encourage new scientific investigations to combat the obesity epidemic. The plan reflects exciting opportunities that have emerged since the NIH published the first strategic plan in 2004.

Polyunsaturated Lipid Function Interest Group: This is an interdisciplinary cross-institute group focusing on many facets of the function of complex lipids. Members of the group have interests that include compositional, metabolic, and nutritional aspects of the essential fatty acids often denoted as PUFA. The term "function" in the title signals the group's intent to bring together physiologists, clinicians, neurobiologists, pharmacologists, and others interested in how polyunsaturated fatty acids function in tissues. Another important interest of the group involves the biophysics and spectroscopy of polyunsaturated lipids in tissue membranes.

VII. KEY FEDERAL COLLABORATIONS RELATED TO NUTRITION

The field of nutrition is enhanced by interagency collaboration. Highlighted below are some of the key collaborative efforts that took place during 2011 and 2012.

Biomarkers of Nutrition for Development (BOND) Program: The NIH *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, in collaboration with the NIH Division of Nutrition Research Coordination and the NIH Office of Dietary Supplements, created BOND to develop a unified approach to examine the scientific basis for selecting appropriate biomarkers to assess the function and effect of diet and nutrition on health and disease in individuals and populations and to support the development and evaluation of evidence-based programs and policies to improve diet and nutrition as a means of improving health. The program has benefited from support from the Bill and Melinda Gates Foundation, European Micronutrient Recommendations Aligned, the Micronutrient Genomics Project, PepsiCo, and numerous other partners.

Additional details are described in the following papers:

1. Raiten DJ, Namasté S, Brabin B, Combs G, et al. [Biomarkers of Nutrition for Development: Building a Consensus](#). *Am J Clin Nutr*. 2011;94(2):633S-650S.
2. Wasantwisut E, Neufeld L. [Use of nutritional biomarkers in program evaluation in the context of developing countries](#). *J Nutr*. 2012;142(1):186S-190S.

Breastfeeding and Human Lactation Research Scientific Interest Group (BALSIG): In August 2012, the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) formed a trans-HHS scientific interest group, BALSIG, to provide an intellectual platform for the scientists from Department of Health and Human Services agencies interested in breastfeeding and human lactation research activities. BALSIG facilitates communication and learning about research gaps in breastfeeding, helps develop funding opportunity announcements, and provides a venue for communication of information on this topic to other scientists and to the public.

BALSIG was formed in part to address the issues raised in the Surgeon General's [2011 Call to Action to Support Breastfeeding](#). Due to the life-course impact of breastfeeding, the issues on this topic are multi-institutional. Thus, BALSIG invites participation by researchers and scientists from the Centers for Disease Control and Prevention, the Food and Drug Administration, the Department of Health and Human Services Office of Women's Health, the Health Resources and Services Administration, the Agency for Healthcare Research and Quality, the Indian Health Service, and other NIH Institutes and Centers.

The Call to Action document can be viewed at:

<http://www.surgeongeneral.gov/library/calls/breastfeeding/calltoactiontosupportbreastfeeding.pdf>

Dietary Guidelines for Americans: The *Dietary Guidelines for Americans* are the Federal Government's evidence-informed nutritional guidance. The recommendations are used to promote health and to reduce risk for major chronic diseases through diet and physical activity. By law, the Dietary Guidelines

for Americans are reviewed, updated if necessary, and published every 5 years. USDA and DHHS jointly produce each edition of the Dietary Guidelines. *The Dietary Guidelines for Americans, 2010* is based on the *Report of the Dietary Guidelines Advisory Committee (DGAC) on the Dietary Guidelines for Americans, 2010* and takes into consideration comments provided by Federal agencies, as well as public comments. Traditionally, the *Dietary Guidelines for Americans* have been intended for healthy Americans ages 2 years and older. The 2010 Dietary Guidelines reflect rising concerns about the health of the U.S. population with their focus on balancing calories with physical activity. The Dietary Guidelines also encourage Americans to consume vegetables, fruits, whole grains, fat-free and low-fat dairy products, and seafood, and less sodium, saturated and *trans* fats, added sugars, and refined grains. Consumer-friendly dietary guidance messages and consumer education materials including ChooseMyPlate.gov and Health.gov have been used to disseminate the Dietary Guidelines recommendations to the general public.

The recruiting process for the 2015 Dietary Guidelines Advisory Committee began in fall of 2012. More information about the 2015 *Dietary Guidelines for Americans* can be found at: www.dietaryguidelines.gov.

Dietary Reference Intakes (DRI) Scientific Evidence Review Activities: Dietary Reference Intakes (DRIs) consist of four nutrient-based reference values that serve as a guide for good nutrition and provide the scientific basis for the development of national nutrition policy and food guidelines in the United States and Canada. DRI recommendations are reviewed periodically as new scientific evidence emerges. A new process, which began in April 2013, has been implemented to allow individuals to nominate nutrients for which Dietary Reference Intake (DRI) values may need to be reviewed. Nominations will be considered by US and Canadian Federal DRI Committees as they undertake the task of prioritizing nutrients for future review. Nominations will be accepted through July 31, 2013 at www.health.gov/DRI.

In 2009, the Institute of Medicine (IOM) of the National Academies of Science convened an *ad hoc* expert panel to review the 1997 DRI recommendations for calcium and vitamin D. NIH-funded research was included in the updated evidence reviewed by the IOM expert panel. The panel's [final report](#) was released in 2011 and included Estimated Average Requirements, Recommended Dietary Allowances, and Tolerable Upper Intake Levels for calcium and vitamin D. More information on DRIs can be found at: <http://fnic.nal.usda.gov/dietary-guidance/dietary-reference-intakes>.

Evaluating the Diet-Related Scientific Literature for Children from Birth to 24 Months: The *Dietary Guidelines for Americans* has traditionally focused on Americans ages 2 and above. However, both external and internal stakeholders have made the recommendation to provide similar guidance for children from birth to 24 months. As a result, DHHS and USDA initiated a collaborative project in 2012 to develop a process to determine the breadth and scope of evidence available to inform development of dietary guidance for this population.

Food Forum: The Food Forum was established by the [National Academies' Food and Nutrition Board](#) in 1993 as a way to bring a diverse group of scientists, administrators, and policymakers from academia,

government, industry, and the public sector together to discuss issues related to food, food safety, and regulation. The goal of the Food Forum is to bring attention to the issues in a neutral setting, not to solve them. Unlike study committees of the IOM, Forums cannot provide advice or recommendations to any government agency or other organization. However, the Forum does provide a mechanism for these diverse groups to identify possible approaches for addressing food and food safety problems. Federal sponsors of the Food Forum include the FDA Center for Food Safety and Applied Nutrition; the USDA Center for Food Policy and Promotion and the USDA Food and Nutrition Service ; and the NIH the Division of Nutrition Research Coordination, National Cancer Institute, and the Office of Dietary Supplements.

Food Safety and Nutrition Working Group (FSNWG): This group was formed in 2012. In addition to having members from NIH on this working group, there are representatives from the Food and Drug Administration, Centers for Disease Control and Prevention, United States Department of Agriculture, and Office of Disease Prevention and Health Promotion. The FSNWG aims to highlight and promote awareness of an integrated approach to nutrition and food science in academia, and among nutritionists and food scientists; to facilitate the alignment of research priorities to address food safety, food quality, and nutrition in single studies, and to identify future research areas that can mesh food safety, food quality, and nutrition together.

Healthy People, 2020: This is a National agenda that communicates a vision for improving health and achieving health equity. It is also a set of specific, measurable objectives with targets to be achieved over the decade.

For three decades, Healthy People has provided a comprehensive set of national ten-year objectives that have served as a framework for public health activities at all levels and across the public health community.

Healthy People objectives are organized within distinct topic areas, for which multiple agencies provide leadership. The National Institutes of Health co-leads the Nutrition and Weight Status, Chronic Kidney Disease, Diabetes, Cancer, and Heart Disease and Stroke topic areas.

For more information on Healthy People topic areas, please view <http://www.healthypeople.gov/2020/topicsobjectives2020/default.aspx>.

HHS Healthy Weight Task Force: To strengthen the Department of Health and Human Services' (HHS) role in curbing the nation's obesity epidemic, HHS Secretary Kathleen Sebelius established a cross-departmental working group—the Healthy Weight Taskforce. This Task Force includes senior representation across all HHS operating and staff divisions and is chaired by Dr. Dora Hughes, Counselor to the Secretary.

The Task Force was charged with developing a comprehensive plan, including a vision, mission, and goals, and proposing initiatives that will impact Americans across their lifespan and in multiple sectors, including clinical settings, communities, and the marketplace. By fostering partnership and

collaboration across the Department, the Task Force developed initiatives that are evidence-based, innovative, and will ultimately reduce obesity in our nation.

Home Box Office (HBO) “The Weight of the Nation” series: NIH collaborated with HBO and others on a three-part documentary series and public education initiative that aired in May 2012. The HBO series highlighted NIH research advances which are an important component of a comprehensive public awareness campaign to combat the nation’s obesity epidemic.

Interagency Committee on Human Nutrition Research (ICHNR): The ICHNR provides a mechanism for communicating among the various federal agencies to enhance the coordination of human nutrition research activities. The ICHNR is co-chaired by the Assistant Secretary for Health, DHHS, and the Assistant Secretary for Science and Education, USDA. The DNRC represents the NIH on the ICHNR and serves as the HHS executive secretariat to the ICHNR. Other members include the Office of Science and Technology Policy, in the Executive Office of the President, the Department of Commerce (DOC), the Department of Defense (DOD), the Agency for International Development (*AID), the National Science Foundation (NSF), the Department of Veterans Affairs (DVA), and the National Aeronautics and Space Administration (NASA), in addition to DHHS (NIH and the Food and Drug Administration), and the USDA (Agricultural Research Service). During a period of inactivity from 2001 to 2012, many of the interagency interactions were transferred to the NIH Nutrition Coordinating Committee. In recognition of ongoing efforts to foster interagency research collaborations within the Federal sector, the ICHNR was reconstituted in 2012.

In addition to its coordination roles, the ICHNR strives to increase the effectiveness and productivity of federal agencies that are engaged in nutrition research by supporting activities to inform researchers and policy staff on ongoing federally supported or conducted human nutrition research, nutrition monitoring, and nutrition program activities.

National Collaboration on Child Obesity Research (NCCOR): NCCOR is a public-private partnership undertaken by the Centers for Disease Control and Prevention (CDC), the NIH (DNRC, NCI, NICHD, NIDDK, NHLBI, and OBSSR), the Robert Wood Johnson Foundation (RWJF), and the USDA. The mission of NCCOR is to improve the efficiency, effectiveness, and application of childhood obesity research and to halt and reverse the childhood obesity epidemic through enhanced coordination and collaboration. The NCCOR partnership has focused its efforts on identifying, designing, and implementing practical, sustainable interventions in diverse settings; increasing national, state, and local obesity surveillance activities; supporting childhood obesity research and program evaluation activities; and identifying ways to optimize research outcomes, build capacity for new research and surveillance, and create and support the mechanisms and infrastructure needed for research translation and dissemination. For more information, visit www.nccor.org

National Food and Nutrient Analysis Program (NFNAP): Federal food and dietary supplement product database activities have been coordinated through the National Food and Nutrient Analysis Program (NFNAP) initiative since 1997. NFNAP is directed by the USDA/ARS Nutrient Data Laboratory (NDL) in

collaboration with NIH/National Cancer Institute and other supporting NIH offices and institutes (DNRC, NEI, NHLBI, NIA, NICHD, NIDCR, NIDDK, ODP, ODS, ORWH) and federal agencies (CDC, FDA, and IHS) .

The five Specific Aims of NFNAP are to: 1) establish a monitoring program for Key Foods and critical nutrients. Key Foods are frequently consumed foods and ingredients, which contributed, collectively, more than 75% of the intake of any specific nutrient for the U.S. population; 2) conduct comprehensive analyses of selected Key Foods; 3) develop databases for high priority foods consumed by U.S. ethnic subpopulations; 4) develop databases for new bioactive components; and 5) develop a validated database for ingredients in dietary supplements. For each Specific Aim, the process includes the identification of foods for analysis, the development of unique statistically based sampling plans, and the application of validated analytical chemistry. The primary outcome of the Program is to develop comprehensive nutrient composition databases having unprecedented analytical quality.

Dietary supplements database activities have developed from the NFNAP initiative. The NIH National Library of Medicine Dietary Supplements Labels Database contains information on more than 6,000 brands of dietary supplement products. Another initiative, the Dietary Supplements Ingredients Database (DSID) provides analytical data on dietary supplement product ingredients. The DSID is led by the USDA/ARS Nutrient Data Laboratory in collaboration with the NIH Office of Dietary Supplements (ODS) and other federal agencies. The goals of the DSID project are to develop reliable baseline estimates of nutrients and other bioactive components in dietary supplement products, compare analyzed levels of ingredients to labeled values, support efforts to improve total dietary intake assessments in research, and release and maintain a publicly available dietary supplement database. The first data release, DSID-1, provides information on chemically-analyzed levels of nutrients found in a nationally representative set of adult multivitamin/mineral (MVM) products used in the U.S. The second release of the Dietary Supplement Ingredient Database (DSID-2), reports national estimates for ingredient levels in children's and adult MVM supplements.

Nutrition and Obesity Policy Research and Evaluation Network (NOPREN): NOPREN is a thematic research network of the Centers for Disease Control and Prevention (CDC) [Prevention Research Centers \(PRCs\) program](#). Its mission is to conduct transdisciplinary nutrition- and obesity-related policy research and evaluation along a policy change continuum. The work of NOPREN members helps foster understanding of the effectiveness of policies related to preventing childhood obesity through improved access to affordable healthy foods and beverages in a variety of settings including communities, workplaces, healthcare facilities, childcare institutions, and schools. In September of 2012, NOPREN members published nine original research articles in a supplement to the *American Journal of Preventive Medicine* which highlight the work of its members. The *AJPM* supplement and as well as more information can be found at www.nopren.net. Workgroups are open to NIH researchers and include Rural Food Access, Food Policy Councils, Healthy Beverages, Early Care and Education, and Policy Communications. NOPREN NIH advisors include staff from the Division of Nutrition Research Coordination and the National Cancer Institute.

Prevention Research Coordinating Committee (PRCC): The PRCC is a trans-agency committee that was formed to provide a broad perspective on prevention science and prevention-related activities that are sponsored by Federal and non-Federal organizations. The PRCC provides a venue for the NIH community to learn about new prevention research, exchange programmatic and scientific information, and identify, plan, and implement collaborative activities in the field of prevention science research. The PRCC also serves as an advisory body to the Director of the NIH Office of Disease Prevention (ODP) and makes recommendations regarding scientific, programmatic, and policy issues. The ODP coordinates the activities of the PRCC. Other participating agencies include the Centers for Disease Control and Prevention (CDC), the Agency for Healthcare Research and Quality (AHRQ), and the Office of Disease Prevention and Health Promotion (ODPHP).

Sodium Reduction Interagency Working Group: This group was formed to promote broad reductions in the sodium content in the food supply by developing and disseminating voluntary sodium reduction targets. The goal was to set targets for packaged and commercially prepared foods to which sodium-containing ingredients, and particularly salt (sodium chloride), are added during processing or preparation. The Working Group proposed an approach that includes developing food categories, identifying baseline levels of sodium in these categories, and then assigning both recommended market-weighted mean sodium concentration targets as well as recommended maximum sodium concentration targets.

VIII. NIH INSTITUTE AND CENTER RESEARCH DIRECTIONS

The NIH supports extensive research on the relationship between nutrition and health. Through approaches that focus on both basic and translational research as well as training investigators, the NIH nutrition portfolio covers a vast array of programs. Details about each IC's specific research directions and priority nutrition areas are below.

[Fogarty International Center \(FIC\)](#)
[The Center for Scientific Review \(CSR\)](#)
[National Cancer Institute \(NCI\)](#)
[National Center for Complementary and Alternative Medicine \(NCCAM\)](#)
[National Eye Institute \(NEI\)](#)
[National Heart, Lung, and Blood Institute \(NHLBI\)](#)
[National Human Genome Research Institute \(NHGRI\)](#)
[National Institute on Aging \(NIA\)](#)
[National Institute on Alcohol Abuse and Alcoholism \(NIAAA\)](#)
[National Institute of Allergy and Infectious Diseases \(NIAID\)](#)
[National Institute of Arthritis and Musculoskeletal and Skin Diseases \(NIAMS\)](#)
[National Institute of Child Health and Human Development \(NICHD\)](#)
[National Institute on Deafness and Other Communication Disorders \(NIDCD\)](#)
[National Institute of Dental and Craniofacial Research \(NIDCR\)](#)
[National Institute of Diabetes and Digestive and Kidney Diseases \(NIDDK\)](#)
[National Institute of Drug Abuse \(NIDA\)](#)
[National Institute of Environmental Health Sciences \(NIEHS\)](#)
[National Institute of General Medical Sciences \(NIGMS\)](#)
[National Institute of Mental Health \(NIMH\)](#)
[National Institute on Minority Health Disparities \(NIMHD\)](#)
[National Institute of Neurological Disorders and Stroke \(NINDS\)](#)
[National Institute of Nursing Research \(NINR\)](#)
[Office of Behavioral and Social Sciences Research \(OBSSR\)](#)
[Office of Dietary Supplements \(ODS\)](#)
[Warren Grant Magnuson Clinical Center \(CC\)](#)

Fogarty International Center (FIC)

<http://www.fic.nih.gov/Pages/Default.aspx>

Nutrition Research Spending (FY 2012):	\$1,163,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	1.7%

OVERVIEW

The Fogarty International Center (FIC) mission is dedicated to advancing the mission of the NIH by supporting and facilitating global health research conducted by U.S. and international investigators, building partnerships between health research institutions in the U.S. and abroad, and training future generations of scientists to address global health needs. The FIC is composed of four divisions whose members work together to support global health research and training programs to improve health and generate data and concepts to guide national and international global health policies including analyses of social, ethical, and economic issues. The FIC currently funds more than 400 research and training projects involving more than 100 U.S. universities and researchers in numerous foreign countries, most of which are in the developing world. FIC staff engage with scientists around the world to address critical global health research problems such as polio eradication, the impact of climate change on disease outbreaks, and the need to strengthen research capacity in Africa.

RESEARCH DIRECTIONS

The FIC Division of International Training and Research (DITR) administers research and training grants and fellowship programs in more than 100 countries. Research training programs focus on infectious diseases, such as HIV/AIDS; TB and malaria; chronic conditions, including cancer, heart disease and diabetes; population health; informatics; genetics; and clinical, operational, and health services.

The FIC Division of International Science Policy, Planning and Evaluation (DISPPE) provides strategic guidance to the FIC Director on the development, analysis, and evaluation of FIC programs and international science policy issues. The Division also tracks international funding agency activities and research trends in global health. The Division advises the FIC Director on legislative and partnership matters and manages the Center's involvement with the Disease Control Priorities Project.

The FIC Division of International Relations (DIR) develops new partnerships among U.S. scientists, institutions, and counterparts abroad to advance research and training in the biomedical and behavioral sciences. The Division works on behalf of the FIC and the NIH as a whole to identify opportunities for collaboration with foreign science-funding agencies, the U.S. Department of State, U.S. technical agencies, and international organizations. The DIR forges agreements with other nations to establish research collaborations and commitments for home country support for foreign researchers when they return from NIH fellowships to facilitate their successful return to their home country.

Scientists in the FIC Division of International Epidemiology and Population Studies (DIEPS) conduct research on the epidemiology and mathematical modeling of infectious diseases. The primary areas of research include cross-national studies of mortality patterns, with special emphasis on influenza, vector-borne diseases, and vaccine-preventable diseases. Since 2000, DIEPS scientists and collaborators in more than 24 countries have conducted research to guide domestic and international policies in countermeasures for potential bioterror agents and public health measures to control the spread of infectious diseases.

The Fogarty International Center has a strong interest in nutrition as it relates to overall global health. Some of the recent nutrition-related projects funded by the Fogarty International Center aim to do the following:

- Improve nutrition-related noncommunicable disease prevention training in China
- Determine the mechanisms and dose-effects of a novel alanyl-glutamine-based oral rehydration and nutrition therapy (Ala-Gln ORNT) for restoration of intestinal barrier function in undernourished Brazilian children
- Understand how weight history, dietary patterns, and genetic variants independently and jointly affect blood pressure and fasting glucose among adult Filipino women
- Investigate a range of issues around the links between child malnutrition and socioeconomic status in South Africa
- Improve understanding of adipogenesis and the role of C/EBP β and heterochromatin
- Improve primary care to prevent childhood obesity in Mexico
- Evaluate the effects of substitution of brown rice for white rice on biomarkers for diabetes risk among adults in Chennai, India who are at high risk for the development of diabetes
- Examine the role of myocardial substrate metabolism in heart failure
- Evaluate the relationship between prenatal exposure to solid fuel smoke exposure and birth outcomes in Sri Lanka
- Develop and strengthen a partnership of multi-disciplinary, international researchers in Thailand and the U.S. focused on the recognition, prevention, and treatment of environmental and nutritional causes of neurobehavioral deficits among Thai infants and young children and to demonstrate the feasibility of conducting a prospective epidemiologic study to assess the impact of maternal/fetal sub-optimal iodine levels and pesticide exposures on thyroid hormone levels and neonatal neurobehavioral development

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The Center for Scientific Review (CSR)

<http://www.nih.gov/about/almanac/organization/CSR.htm>

Nutrition Research Spending (FY 2012):	NA
Nutrition as Percentage of Total IC Obligations (FY 2012):	NA

OVERVIEW

The primary mission of the Center for Scientific Review's (CSR) staff is to see that NIH grant applications receive fair, independent, expert, and timely reviews that are free from inappropriate influences to ensure that NIH funds the most promising research. CSR receives all research and training grant applications submitted to the NIH and handles the review of more than 70 percent of these applications by organizing peer review groups (termed "study sections"). Additionally, CSR receives some of the applications submitted to other components of the U.S. Department of Health and Human Services (HHS). CSR holds 1,600 review meetings per year, involving about 18,000 reviewers from the scientific community.

CSR assigns all incoming NIH applications (approximately 80,000 per year) to the appropriate NIH institutes or centers for consideration for funding and also to the scientific review groups within CSR or other institutes or centers for review. Additionally, CSR provides the scientific merit review of most research grant and fellowship applications submitted to NIH. Further, CSR provides staff support to the Office of the Director, NIH, in the formulation of grant and award policies and procedures. CSR staff also assist other NIH components in providing information on the NIH peer review system and information about the research grant and fellowship application process and procedures to the scientific community, Congress, other NIH staff, and the general public.

CSR developed an Early Career Reviewer Program to train established scientists without prior experience reviewing NIH grant applications to become excellent reviewers; enrich the talent pool of NIH reviewers by recruiting scientists from less research-intensive institutions; and help emerging researchers advance their careers by exposing them to the grant review process.

Dr. Richard Nakamura was appointed director of CSR in December 2012, having served as the acting director when Dr. Antonio Scarpa retired in September 2011.

NUTRITION-RELATED GRANT APPLICATIONS

Nutrition-related grant applications are evaluated in many of the CSR Integrated Review Groups (IRGs) and their related study sections. More information about the IRGs can be found at:

<http://public.csr.nih.gov/StudySections/IntegratedReviewGroups/Pages/default.aspx>

Rosters and descriptions for these study sections, as well as scientific review administrator contact information, are available on CSR's Web site:

<http://public.csr.nih.gov/RosterAndMeetings/Pages/default.aspx>

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National Cancer Institute (NCI)

<http://www.cancer.gov/>

Nutrition Research Spending (FY 2012):	\$286,701,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	5.7%

OVERVIEW

Cancer is the second leading cause of death in the United States. During 2012, the number of new cancer cases was expected to approach 1,638,910 and about 577,190 could die as a result of cancer-associated complications. Since the NCI was established in 1937, scientists have identified various cancer-related factors such as genetics and environmental exposures. Foods and their associated constituents are thought to be environmental factors that can significantly influence cancer risk and tumor behavior. The complexity of this area is expanded by the thousands of dietary components that are consumed.

Cancer research and training are performed and/or supported by both intramural and extramural programs at NCI. NCI makes awards to investigators residing in the United States and at international sites. In 1992, the NCI established the Specialized Programs of Research Excellence (SPORE) to promote interdisciplinary research and speed the bidirectional exchange between basic and clinical science. NCI supports various interdisciplinary training programs in both basic and population sciences to foster the development of future national and international scientific leaders who will use modern approaches and technologies to address critical issues related to diet and cancer.

NCI nutrition research incorporates a variety of approaches to determine the impact of diet and dietary components on the cancer process, including epidemiologic studies with target and cross-sectional populations, case-control and cohort studies, clinical intervention studies, compositional studies involving food content and components, preclinical (animal models and cell cultures) and clinical biochemical/physiologic assessments of nutrient metabolism and absorption patterns, and various preclinical and clinical models for identifying sites of action (molecular targets). In addition, NCI provides summaries of ongoing research related to nutrition and cancer through Web sites and other programs within the Office of Communications and Education.

RESEARCH DIRECTIONS

NCI supports extensive research on the relationship between nutrition and cancer in a wide variety of areas spanning the prevention and therapy domains including studies that focus on basic molecular and cellular mechanisms of action of bioactive food components, dietary assessment methods, etiology, risk factor monitoring, and development of evidence-based interventions. Among the many research approaches being pursued and/or encouraged, the following are of particular note:

Dietary Assessment Methods

- Innovative methodologies, including nanotechnologies, for assessing nutritional status
- Comparative studies with biological fluids, tissues biopsies and/or exfoliated cells to evaluate nutritional status as influenced by exposures and genetics
- Innovative approaches and technologies for assessing diet, weight control, and physical activity behaviors, such as electronic handheld monitoring devices and internet surveys, in collaboration with other NIH institutes
- Identification and validation of biomarkers of dietary intake to assess the accuracy of dietary assessment methods commonly used in epidemiology, intervention, and surveillance research
- Improved diet and physical activity assessment methodology across culturally diverse populations

Define Molecular Targets for Bioactive Food Components

- Preclinical and clinical studies using genomic, epigenomic, proteomic and metabolomic approaches to identify critical bioactive food components and their sites of action in the cancer process
- Clinical studies to examine biological effects of microbially-generated metabolites from food components and their role in cancer prevention, etiology, and cancer health disparities
- Essential and non-essential food components as modifiers of carcinogen metabolism, DNA repair, cell proliferation, differentiation, immunocompetence, hormonal homeostasis, and apoptosis
- New technologies for evaluating metabolic profiles, genetic susceptibilities and predispositions to cancer as influenced by diet
- Trans-disciplinary research centers to discover and characterize mechanisms by which diet, weight, and physical activity interacts with genetic and other factors in cancer development and progression
- Food preparation and processing methods, as well as variation in food and alcohol, fat, and fiber intake as modifiers of biomarkers or tumor incidence
- Interdependence of obesity, exercise, and inflammatory responses in establishing cancer risk and tumor behavior through various epidemiologic, clinical and preclinical investigations
- Physiological responses to phytochemicals occurring in fruits and vegetables, zoochemicals occurring in animal products, fungochemicals occurring in mushrooms, and bacterochemicals arising from gastrointestinal microorganisms to determine their role in cancer incidence and tumor behavior

- Nutritional requirements of the cancer patient and neoplastic tissues with emphasis on nutrient uptake, utilization, and cellular control mechanisms in both normal and neoplastic tissues, and on host-tumor interactions and competition for nutrients

Population Surveillance, Economics and Policy

- Population-level monitoring of diet and other risk factors for the refinement of nationwide surveys such as the National Health Interview Survey, California Health Interview Survey, and National Health and Nutrition Examination Survey
- Cohort Consortium to collect enhanced self-report and objective measures on diet and bioactive food components
- Collaboration with the National Center for Health Statistics (NCHS), nationwide surveys to enhance self-report, biologic, and genetic measures for monitoring and examining the impact of behaviors related to energy balance and cancer
- Public comprehension of health recommendations on nutrition and physical activity through the NCI Health Information National Trends Survey (HINTS)
- Trans-NIH initiative to support innovative economic research on diet, physical activity, and energy balance to examine societal, market and economic forces that may influence nutrition and related practice, particularly in at risk populations
- Private-public initiatives to develop research resources to track legislation and policies related to diet, weight control, and physical activity to assist in the understanding of factors influencing decisions at the population level and within clinical practice

Development of Evidence-Based Interventions

- Trans-disciplinary research centers to develop effective innovative approaches with broad population impact at the social, environmental, and policy levels for prevention of obesity
- Clinical dietary intervention trials with specific diets, foods and bioactive food components, cancer incidence, and tumor behavior
- Genomic technologies to identify those who respond maximally to dietary intervention and those who might be placed at risk because of dietary change
- Cost-effective approaches using food components for prevention and therapeutic strategies within clinical interventions
- Clinical trials to evaluate the effectiveness of nutritional support in the rehabilitation of the cancer patient, nutrition requirements during remission, and nutrient and dietary factors needed to maximize patient survival

- Behavioral research to identify evidence-based behavioral approaches for improving diet, physical activity, and weight control practices

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National Center for Complementary and Alternative Medicine (NCCAM)

<http://www.nccam.nih.gov/>

Nutrition Research Spending (FY 2012):	\$31,757,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	24.8%

OVERVIEW

The National Center for Complementary and Alternative Medicine (NCCAM) is the Federal Government's lead agency for scientific research on complementary and alternative medicine (CAM). The Center's mission is to define, through rigorous scientific investigation, the usefulness and safety of CAM interventions and their roles in improving health and health care. There are many definitions of CAM. NCCAM simply defines it as a group of diverse medical and health care interventions, practices, products, or disciplines that are not generally considered part of conventional medicine, such as natural products and mind and body approaches. According to the 2007 National Health Interview Survey, 38% of American adults used some form of CAM in the previous 12 months. Nearly 18% of adults (about 38.8 million people) reported using non-vitamin, non-mineral natural products and over 3% (approximately 7.8 million people) used diet-based therapies.

CAM Natural Products Research

Establishing priorities across the entire field of CAM research is enormously challenging. Of particular interest to the field of nutrition is NCCAM's robust natural products research portfolio that includes dietary supplements, herbal and botanical products, probiotics, and food-based phytochemicals. The Center's research on natural products relies heavily on the methods and tools of pharmacology and pharmacognosy. NCCAM has established rigorous standards and policies for quality and integrity of products used in NCCAM-supported research. Read more at: <http://nccam.nih.gov/research/policies/naturalproduct.htm>.

RESEARCH DIRECTIONS

Historically, NCCAM has supported the vast majority of basic and translational research and development activities relevant to CAM natural products through general solicitations for investigator-initiated research grants. This broad-based approach has yielded a large body of basic mechanistic information and promising leads for future research; support of similar research in the future remains essential. Going forward, a portion of NCCAM's natural product efforts will be targeted to more directed translational and clinical research needed to expedite the development of the evidence base regarding specific, high-priority CAM natural products.

NCCAM's three strategies to advance natural products research are:

- Harness state-of-the-art "omics" and other high-throughput technologies and systems biology approaches of the sciences of pharmacology and pharmacognosy
- Support translational research to build a solid biological foundation for research on CAM natural products
- Support targeted large-scale clinical evaluation and intervention studies of carefully selected CAM natural products

In addition, NCCAM is closely aligning its probiotic research with the trans-NIH Microbiome Project exploring the complex microbial ecology of host-microbial relationships. NCCAM is also directing efforts to promote greater trans-agency and inter-agency collaborations to share resources and expertise with the U.S. Food and Drug Administration and the U.S. Department of Agriculture, as well as other Federal agencies and stakeholders to facilitate progress in CAM research and regulatory policy. Finally, NCCAM continues to co-sponsor a Botanical Dietary Supplements Centers Program with the NIH Office of Dietary Supplements.

Research solicitations across the broad spectrum of NCCAM's research, including natural products, may be found at <http://www.nccam.nih.gov/grants/funding>.

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National Eye Institute (NEI)

<http://www.nei.nih.gov/>

Nutrition Research Spending (FY 2012):	\$11,282,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	1.6%

OVERVIEW

NEI's mission is to reduce the prevalence of blindness, visual impairment, and eye disease in the United States and throughout the world. According to the [World Health Organization](#), three quarters of the 45 million cases of blindness worldwide are considered curable or preventable. Xerophthalmia, a blinding disease caused by vitamin A deficiency, is the leading cause of nutrition-related blindness and visual impairment among the world's children. It accounts for 70 percent of the estimated 1.5 million blind children in the world. Mild vitamin A deficiency, with consequences for child health and survival, affects another 20 to 40 million children worldwide.

Age-related cataract and macular degeneration are the major causes of visual impairment and blindness in the aging U.S. population. NEI supports research on the role of nutrition and of micronutrients, such as vitamins and trace minerals with antioxidant capabilities, in the development and worsening of these two eye disorders. NEI-supported scientists also are evaluating the effect of nutritional factors on other visual disorders, such as retinopathy of prematurity, glaucoma, retinitis pigmentosa, and diabetic retinopathy.

RESEARCH DIRECTIONS

The following projects represent some of the many nutrition-related research areas supported by NEI:

- The major epidemiological and randomized placebo-controlled clinical trial "Age-Related Eye Disease Study" ([AREDS](#)) showed that high levels of antioxidants (vitamin C, vitamin E, and beta carotene) and zinc reduced the risk of progression to advanced age-related macular degeneration (AMD) by 25 percent for those at high risk.
- A follow up study, [AREDS2](#), is assessing the effects of oral supplementation of carotenoids found in high concentration in human macula (lutein and zeaxanthin) and/or long-chain omega-3 fatty acids, docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), on the progression to advanced age-related macular degeneration (AMD).
- As ancillary studies to the VITamin D and OmegaA-3 Trial (VITAL) randomized trial, investigators will examine effects and synergism of DHA and EPA supplements from fish oil and vitamin D in reducing incidence or progression of AMD and dry eye disease.

- To uncover the mechanisms by which omega-3 fatty acids protect eyes from neovascularization in a hyperoxia-induced model of retinopathy, researchers screened mice with mutations in different metabolic enzymes and identified an enzyme (5-LOX) for its role in mediating DHA protection. 5-LOX converts DHA into a compound that binds a protein known as PPAR. PPAR is a target of anti-diabetic drugs, so this advance suggests omega-3 fatty acids may be part of a solution to prevent neovascularization in diabetic retinopathy or AMD.
- Epidemiology studies are elucidating the interacting roles of environmental and genetic risk factors for complex eye diseases by examining diet and lifestyles in different populations. Using blood tests or nutritional surveys, the importance of fish oils, carotenoids, and vitamins for eye disease are being studied.
- Using samples collected in a recent clinical trial, blood and diet-based studies are examining the mechanisms by which folic acid and B vitamins are protective against AMD. These analyses are looking at the effects of supplements on biomarkers of inflammation and blood vessel function.
- Basic research on the metabolism of nutritional compounds, such as carotenoids using animal models, complement epidemiological studies of the eye. Animal models also are useful for testing nutritional/pharmacological therapies to prevent proliferative diabetic retinopathy (PDR), for example. Diets rich in omega-3 fatty acids counter the effects of diabetic retinopathy; scientists are testing the ability of these fatty acids along with COX-2 inhibitors, such as aspirin, to target inflammatory and angiogenic factors in PDR.
- NEI grantees are investigating the role of oxidative stress in age- and diabetes-related eye diseases, such as AMD, cataract formation, and glaucoma. Scientists are testing if dietary interventions can modify these biochemical markers of oxidative stress in AMD patients with different backgrounds. Other teams are examining the mechanisms by which caloric restriction protects retinal cell death in glaucoma and whether these mechanisms can be reversed through dietary supplements such as resveratrol, a natural compound found in red wine.
- Vitamin A is the precursor for 11-cis-retinal, a molecule essential for vision. Investigations into vitamin A, its derivatives, and the proteins that bind and transport it to cells are a major focus of NEI-supported research. Scientists are exploring the role these substances play in the normal metabolism of ocular tissues and in the visual cycle. Alterations of ocular tissue integrity and metabolism brought about by chronic deficiency of vitamin A also are being studied. These investigations include studying the role of vitamin A in maintaining the immune competence of the eye and the ability of ocular tissues to respond to infections and trauma.
- Vitamin D, predominantly produced in the skin in response to UV sunlight, may also be produced in the cornea. It may also have a role in intraocular pressure control and AMD. NEI research is focusing on Vitamin D metabolism in the cornea and its role in corneal wound healing. Vitamin D deficiency may affect over 50 percent of the United States population.

- Stargardt macular degeneration is a genetic disease affecting lipid metabolism in the retina. Research on nutritional interventions may prove fruitful in delaying or slowing disease progression. NEI funded a Phase I safety trial with Alkeus Pharmaceuticals to test vitamin A enriched with deuterium (D3-Vit.A) for Stargardt's disease and for dry AMD. In animal models, D3-Vit.A slows formation of vitamin A dimers and lipofuscin in the eye.
- Cystoid macular edema (CME), swelling of the retina, is a complication occurring in 25 percent of patients with retinitis pigmentosa, but may be reduced by iodine supplements. Researchers are studying the role of dietary iodine, as well as linolenic acid, in reducing the risk of CME.
- As part of a larger multi-center study on neonatal research, NEI supports studies on the effectiveness of inositol in baby formula in preventing retinopathy of prematurity, a blinding disease that occurs in some prematurely born infants.

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National Heart, Lung, and Blood Institute (NHLBI)

<http://www.nhlbi.nih.gov/>

Nutrition Research Spending (FY 2012):	\$236,207,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	7.7%

OVERVIEW

The diseases within the purview of the NHLBI impose a heavy burden on the health and economy of the American people. Cardiovascular, lung, and blood diseases accounted for 43 percent of all deaths in the United States in 2008. Cardiovascular and lung diseases account for 3 of the 4 leading causes of death and 4 of the 10 leading causes of death in infants. The estimated economic cost in 2008 for these diseases was \$392 billion, 22 percent of the total economic costs of illness, injuries, and death.

An important overall goal of the NHLBI nutrition research program is to prevent, treat, and cure cardiovascular diseases, such as heart attack, stroke, arrhythmias, peripheral arterial disease, and heart failure, and their risk factors. With heart disease as the nation's number one killer, an important focus of the research is to reduce risk by examining the influence of nutrition and physical activity on well-characterized risk factors such as high blood cholesterol levels, high blood pressure, obesity, and poor levels of cardiovascular and physical fitness. Emerging cardiovascular risk factors such as elevated inflammatory response markers also may be influenced by nutrition, and it is hoped that a better understanding of these relationships will ultimately provide new approaches to prevention. Some cases of congenital heart defect also appear to have a nutritional basis and thus may be prevented by improving maternal diets or nutritional status.

Other critical goals of the NHLBI nutrition research program are to prevent and treat lung and blood diseases, such as asthma, chronic obstructive pulmonary disease, clotting disorders, and sickle cell disease. A newer area of nutrition research interest is in sleep disorders, which are associated with obesity, are risk factors for cardiovascular disease, and have many intriguing connections with nutrient metabolism.

The scope of the NHLBI nutrition research program encompasses the full research spectrum including basic investigations, observational studies, clinical and community intervention studies, and demonstration and dissemination studies. NHLBI also fosters collaboration to apply research results and leverage resources to address public health needs, nationally and internationally. In addition, NHLBI supports academic and professional training in nutrition research as well as the development of innovative nutrition education programs for medical students, residents, and attending physicians. And, NHLBI manages science-based national education programs designed to help children stay at a healthy weight and to reduce cardiovascular risk factors in underserved communities.

RESEARCH DIRECTIONS

Some of the main points of emphasis in the NHLBI nutrition research program include:

Heart and Vascular Diseases

- Develop biomarkers of nutrient metabolism for use in studies of the causation, prevention, or treatment of cardiovascular diseases
- Investigate the interaction of nutrients or dietary factors with pharmacologic agents to reduce cardiovascular disease risk
- Evaluate the relationship between physiologic- and pharmacologic-level intake of nutrients and other dietary components with the pathophysiology of atherosclerosis and other cardiovascular disease mechanisms
- Develop animal models to study obesity, hypertension, dyslipidemias, and other nutrition-related cardiovascular risk factors
- Investigate the interactions between genetic factors and diet as they influence cardiovascular disease risk
- Develop and test interventions to prevent obesity and excessive weight gain across the lifespan, and for long-term maintenance of weight loss, particularly interventions that are practical, cost-effective, sustainable, and have high potential for broad-scale dissemination
- Develop improved technologies for assessing energy balance, intake, and expenditure under research conditions and in real-world settings
- Elucidate the role of body weight and fat distribution as related to the development of cardiovascular disease and its risk factors
- Determine the optimal amount, type, and intensity of physical activity or fitness level needed for weight control and cardiovascular health
- Determine the relative roles of physical activity and diet in achieving energy balance, healthy body weight, fat loss, changes in body fat distribution, and long-term maintenance of weight loss
- Develop effective methods for increasing and sustaining regular moderate-intensity physical activity
- Investigate mechanisms and implications of unintended weight loss in low to moderate risk populations and on heart failure
- Develop and evaluate nutrition-focused interventions to reduce cardiovascular risk including targeted to different literacy levels, socioeconomic levels, and race/ethnic groups

- Develop effective strategies and materials for the dissemination of nutrition and disease prevention information aimed at health professionals and the public of different ages, literacy levels, and ethnic backgrounds
- Identify behavioral and environmental determinants of nutrient intake and dietary patterns as they affect cardiovascular risk and health
- Characterize behavioral determinants of adherence to dietary recommendations and develop effective interventions to improve adherence
- Develop and test intervention strategies that focus on the interactions among individual dietary behaviors, genetics, and the environment (e.g., home, community, and built environment) to reduce cardiovascular risks
- Identify dietary patterns, foods, nutrients, and other dietary components that are effective in improving blood pressure, lipids, glucose, and overall cardiovascular health, and also determine the mechanisms by which these effects are achieved
- Identify influences of the built, home, psychosocial, and sociocultural environments on dietary behavior, and develop and test interventions targeting these influences
- Investigate racial, ethnic, and gender differences in nutrition-related coronary heart disease risk, nutrient metabolism, dietary habits, and responsiveness to dietary intervention
- Investigate the effects of macro- and micro-nutrients, functional foods, and complementary and alternate medicines in the prevention and treatment of cardiovascular disease
- Monitor secular trends in dietary intake and their relation to cardiovascular disease and its risk factors
- Continue surveillance of public knowledge and physician practices that pertain to diet, obesity, and cardiovascular disease.
- Advance the state of the art in dietary intake methodology, including dietary assessment tools, statistical techniques, and food composition analysis, methods, standard reference materials, databases, and software

Lung Diseases and Sleep Disorders

- Investigate the role of nutrition in the development of normal pulmonary immune defense systems, especially during lung development
- Explore the role of nutrition in preventing respiratory muscle dysfunction in acute and chronic pulmonary disease
- Determine the relationship between sleep apnea (sleep-disordered breathing) and obesity, as well as the effect of dietary factors on the control of breathing and airway function

- Determine the functional and health-related consequences of sleep debt on increased disease risk for nutrition-related conditions such as obesity, cardiopulmonary diseases, and diabetes
- Investigate the role of specific nutrients in adult and infant respiratory distress syndromes
- Evaluate the relationship between diet and genetic factors in determining an individual's susceptibility to diseases of the lung
- Examine undernutrition as a risk for tuberculosis and other lung infections
- Evaluate the effect of maternal diet during pregnancy on the development of allergies and asthma in the offspring

Blood Diseases

- Identify mechanism(s) by which nutrients and other dietary factors influence the synthesis and expression of functional activity of platelets and of proteins involved in the coagulation of blood
- Elucidate the role of nutrients and other dietary factors in the genesis, treatment, and prevention of blood vessel obstruction
- Investigate energy balance and nutrient requirements among children with sickle cell disease, especially children who fail to thrive, and adolescents who are in a rapid growth phase
- Conduct studies on the benefits of appropriate dietary intervention and nutritional supplementation in hemoglobin disorders
- Improve understanding of nutritional factors in the management and clinical variability of hemoglobin disorders
- Characterize the relationship between nutritional deficiencies and immune dysfunction in sickle cell disease

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National Human Genome Research Institute (NHGRI)

<http://www.genome.gov/>

Nutrition Research Spending (FY 2012):	\$9,621,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	1.9%

OVERVIEW

The National Human Genome Research Institute (NHGRI) led the National Institutes of Health's (NIH) contribution to the International Human Genome Project, which had as its primary goal the sequencing of the human genome. This project was successfully completed in April 2003. Now, NHGRI's mission has expanded to encompass a broad range of studies aimed at understanding the structure and function of the human genome and its role in health and disease.

To that end, NHGRI supports the development of resources and technology that will accelerate genome research and its application to human health. A critical part of the NHGRI mission continues to be the study of the ethical, legal, and social implications (ELSI) of genome research. NHGRI also supports the training of investigators and the dissemination of genome information to the public and to health professionals.

RESEARCH DIRECTIONS

NHGRI funds a variety of projects related to understanding the complex relationships between nutrition and genomics.

The NHGRI Intramural Research Program has a specific project dedicated to understanding the contribution of folate and vitamin B12 to genes and to disease.

A major area of investigation in the NHGRI Intramural Program is the genetics of neural tube defects (NTDs), one of the most common birth defects in the United States. Spina bifida, the most common NTD, results in the exposure of the spinal cord through an opening in the vertebrae. It often is corrected by major surgery, but it still can lead to life-long medical complications, including paralysis. A better understanding of the root causes of NTDs, therefore, is needed. It is known that inadequate folate in the diet can increase a women's risk of having a child with neural tube defects. Inherited variation in the genes involved in folate metabolism may also lead to an increase in risk. NHGRI researchers are searching for variants in genes related to folate, methionine, and homocysteine metabolism. These researchers have found that variants in one of these genes, TC2, appear to affect the levels of vitamin B12 in the maternal circulation during pregnancy. This finding may be related to birth defects and also may help to explain why some elderly individuals become anemic and suffer neurological symptoms from vitamin B12 deficiency. This research has also found that mothers carrying a specific variant in a second gene, MTHFD1, have a 50 percent increased risk of bearing a child with a neural tube defect. Detailed knowledge of the function of the two genes will add to the understanding of neural tube

defects and potentially help guide public health policy in the area of nutritional supplementation. The laboratory is also collaborating with researchers at Trinity College in Dublin, Ireland—a country with an historically high rate of NTDs—and at the National Institute of Child Health and Human Development at NIH to identify genes controlling NTD risk in a large series of affected Irish families. This team has identified human genetic variants in the majority of the genes encoding the constituents of folate, vitamin B12, and homocysteine metabolic pathways. The team also established that perturbations of the folate metabolic pathways account for a large fraction of NTD cases.

In addition, NHGRI funds other nutrition-related projects including:

- Genomic approaches to understanding metabolism and aging
- Patient perceptions of bioengineered probiotics and clinical metagenomics
- Federal regulation of probiotics: An analysis of existing regulatory framework
- Genetic analysis of type 2 diabetes in Finnish population
- GWAS of longitudinal blood pressure profiles from young adulthood to middle-age
- Investigations of methylmalonic acidemia and related disorders

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National Institute on Aging (NIA)

<http://www.nia.nih.gov>

Nutrition Research Spending (FY 2012):	\$92,876,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	8.3%

OVERVIEW

Today, approximately 13 percent of Americans are over age 65. By the year 2025, this number is expected to grow to over 20 percent as life span extends well into the eighth decade. The mission of the NIA is to foster research that finds methods to extend years of productive life through improved health, lifestyle, and psychosocial status. NIA contributes to this goal by sponsoring basic, animal model, clinical, and population-based studies to determine the ways in which nutrition influences the onset and progression of aging.

Nutrition and aging research poses several unique challenges. The variation of physiological and behavioral measures increases with age. Because the rate of change in functional capacity and aging processes differs among individuals, those who reach old age are the most biologically heterogeneous of all age groups. The diversity observed in aging subjects results from a lifetime of environmental experiences superimposed on individual differences in genetic predisposition. Investigators in nutrition and aging must consider such factors as genetic variation, race, smoking status, physical activity, health and medication history, and social factors.

A most difficult problem is to separate those changes observed in old age that are due to inevitable aging processes from those that are manifestations of pathology. In some cases, such as those related to the progressive loss of skeletal tissue, an aging process becomes pathological when bone density is reduced to a level where low-trauma fractures can occur. Researchers also must determine if the magnitude of change in age-related parameters is clinically significant and which aging processes are detrimental to the health of older individuals.

RESEARCH DIRECTIONS

The National Institute on Aging continues its efforts in nutrition research to promote and maintain healthy aging. The NIA solicits input from the scientific community to aid in identifying the most important topic areas and directions for nutrition and aging research.

Nutrition research is supported in the four Extramural Divisions—Division of Aging Biology (DAB), Division of Behavioral and Social Research (BSR), Division of Geriatrics and Clinical Gerontology (GCG), and Division of Neuroscience (DN) as well as in the NIA Intramural Programs—Laboratories of Epidemiology, Demography, and Biometry, Clinical Investigation, Cardiovascular Science, Molecular Biology and Immunology, and Experimental Gerontology, Genetics, Molecular Gerontology, Neurogenetics, Neuroscience, and Behavioral Neuroscience. In 1991, the NIA created a Nutrition Office

to facilitate interaction and planning activities among the NIA programs to give nutrition and aging research greater visibility.

Present research directions and areas of priority in nutrition and aging are based on NIA staff evaluation of current research, advice from scientific advisors, and the results and recommendations from nutrition and aging conferences. These include the following and the Divisions most likely to be interested in these areas of research:

- Bionutrition studies utilizing cellular and molecular techniques to identify the mechanisms of age-related changes in metabolism, homeostasis, and differential cell function (DAB)
- Nutrient requirements and their age-dependent changes in older persons and animal models (DAB and GCG)
- Effects of age on physiological processes through which nutrients, drugs, and other non-nutrient substances are absorbed, metabolized, and excreted in humans and in analogous animal models (DAB and GCG)
- Nutritional status of older Americans and special subpopulations of older people at special nutritional risk (GCG)
- Effects of calorie reduction on age-related pathologies and/or longevity (DAB and GCG)
- Nutritional factors associated with physiologic changes such as immunocompetence, cardiovascular function, neurological function, body composition, sensory perception, cognitive decline, control of appetite, macronutrient storage and utilization, endocrine control, and genetics (DAB, GCG, DN)
- The role of nutritional factors, including dietary supplements, in prevention and treatment of age-related degenerative diseases including diabetes, osteoporosis, neurological disorders, immune deficits, heart disease, cancer, gastrointestinal diseases, and other comorbidities (DAB, GCG, DN)
- Effect of neurological changes, such as dementia, and declines in sensory reception and perception on nutrient intake (DN)
- Neural mechanisms underlying the control of eating, drinking, and satiety that affect nutrient intake (DN)
- Effect of diet, food extracts, and dietary supplements on cognition, sensory systems, and motor function (DN)
- General epidemiological studies and analysis of nutritional status, body composition, and their correlates with functional measures (GCG and BSR)

- Psychosocial aspects of nutrition, including studies of diet as a major factor contributing to the quality of life and how diet interacts with other lifestyle variables including exercise, smoking, and consumption of alcoholic beverages (BSR)
- Behavioral aspects of dietary change (BSR)

A rapidly aging population makes it critical to find ways to maximize the span of good health and thereby improve the quality of life of older people. For this reason, the NIA supports research to clarify nutrition-aging interactions.

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National Institute on Alcohol Abuse and Alcoholism (NIAAA)

<http://www.niaaa.nih.gov/>

Nutrition Research Spending (FY 2012):	\$25,647,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	5.6%

OVERVIEW

The NIAAA supports nutrition research through programs in basic and clinical sciences and seeks to identify the complex relationships between alcohol consumption, nutritional status, and health.

RESEARCH DIRECTIONS

Examples of the nutrition research encouraged and supported by the NIAAA are:

- Studies on alcohol metabolism and its effect on autonomic signals involved in alcohol and food intake
- Studies on the interaction between chronic alcohol intake and the bioavailability of water-soluble vitamins, such as thiamin, riboflavin, vitamin B-6, folic acid, vitamin B-12, and vitamin C, in addition to studies on alcohol effects on the absorption and physiological role of lipid-soluble vitamins (A, D, E, and K)
- Studies on alcohol effects on the absorption, utilization, and excretion of minerals (iron, magnesium, zinc, selenium, and calcium) to clarify the role that alcohol-induced changes in these minerals may play in inducing pathological consequences of chronic alcohol consumption, such as liver fibrosis and hypertension
- Studies on ethanol alteration of the distribution of essential fatty acids and prostanoid production and the role of eicosanoids in alcohol-induced physiological changes
- The role of alcohol-induced malnutrition in the pathogenesis of fetal alcohol syndrome (FAS), including impaired placental transport of nutrients
- Studies on ethanol-induced free radicals with subsequent impaired cellular processes, and studies on the role of radical-scavenging nutrients and antioxidants, such as vitamin E, vitamin C, carotenoids, and thiols in preventing alcohol-induced tissue damage
- Studies of alcohol-nutrient interactions related to possible health risks or benefits of moderate ethanol intake

- Studies on the caloric value and bioenergetics of ethanol and their relationship to obesity and body composition to clarify the nutrient value of alcohol and the fate of alcohol-related nutrient energy
- Studies of the roles of thiamin deficiency, alcohol intake, and genetic predisposition in the etiology of cellular degeneration and Wernicke-Korsakoff syndrome
- Research examining the genetic epidemiology and relationship of eating disorders to alcohol
- Evaluation of the role of alcohol-associated increased iron accumulation in the development of alcoholic liver disease and pancreatitis
- Evaluation of the role of alcohol-associated depletion of folate, S-adenosylmethionine, and glutathione in the development of alcoholic liver disease, pancreatitis, cardiomyopathy, and lung injury
- Understanding the role of magnesium in alcohol-associated strokes
- Understanding the role of alcohol on fat metabolism (oxidation, synthesis, and transport of fatty acids) and its connection with the development of alcoholic liver disease
- Studies on the possible role of fat composition of the diet in induction or prevention of fatty liver, hepatitis, or liver fibrosis
- Investigation of the effects of alcohol on vitamin A metabolism and associated tissue injury
- Examination of the role of choline, betaine, and phosphatidylcholine in the attenuation of alcoholic liver disease

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National Institute of Allergy and Infectious Diseases (NIAID)

<http://www.niaid.nih.gov/>

Nutrition Research Spending (FY 2012):	\$31,234,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	0.7%

OVERVIEW

Although NIAID was established in 1948, it traces its roots back to the Laboratory of Hygiene, a bacteriological laboratory that was founded in 1887 and was the forerunner of NIH and NIAID. NIAID supports basic and clinical research in microbiology, infectious diseases, immunology, and allergy. A major component of NIAID's basic research is concerned with fundamental life processes as exemplified in microorganisms and in animal cells in vitro. Techniques and basic biologic principles, developed as a result of this fundamental research in microbiology and immunology, have been applied to other areas of biology and medicine, including nutrition.

The complex interrelationships among nutrition, microbial infections, and immunology have important health implications. In the developing world, more than 1 billion cases of infectious diarrheal disease occur annually in children under the age of 5 years. Malnutrition both predisposes to diarrhea and occurs as a result of diarrhea. Immunodeficiency states, such as HIV/AIDS, cause malnutrition and set the stage for co-infections and co-morbidities that accelerate the cycle of malnutrition and infection. Asthma and allergic diseases affect over 40 million Americans. Surgery and trauma lay the groundwork for infection and subsequent malnutrition. Many of these infections and conditions, or their complications, can be mitigated, at least in part, by appropriate nutrition.

NIAID studies on nutrition are an integral part of the institute's research to lessen the adverse health consequences of immunologic and infectious diseases. Of particular significance are the consequences of wasting on the underlying HIV/AIDS disease process, including its infectious and immunological complications, and the role of nutrition in the development of safe and effective vaccines against infectious diseases. Continuing concerns are the prevalence of infections among the malnourished, the effect of infections on nutritional status, host-microbiome interactions and its relationship to nutrition in health and disease, the prevalence and control of acute respiratory infections and food-borne microbial illness, and the effect of malnutrition on resistance to infection, especially to infectious diarrhea and respiratory infections in young children.

RESEARCH DIRECTIONS

NIAID's interest in nutrition aims at a better understanding of the complex inter-relationships of nutrition, immunity, and infection. The institute's research directions are correspondingly varied. They include the following:

- All aspects of nutrition and the development, consequences, and treatment of HIV/AIDS; the relationship of nutrition to the development and treatment of co-morbidities (such as osteopenia) associated with HIV disease and treatment; the relationship of nutrition to the pathogenesis and treatment of pediatric HIV disease, such as growth and development, including the impact of infant feeding choices; and the impact of undernutrition on absorption and pharmacodynamics of antiretroviral agents
- The negative effect of malnutrition on resistance to tropical infections, especially infectious diarrheas and tuberculosis, and the role of breast milk as a defense against enteric infections
- The role of host-microbiome interactions in disease and its relationship to nutrition
- The significant morbidity and mortality of rotavirus-induced infectious diarrhea among infants in developing countries and a major effort to develop a safe, effective, and practical rotavirus vaccine for newborns
- The impact of micronutrient deficiencies on the outcome of acute respiratory infections and on viral evolution, and the role of vitamin D and other micronutrients on tuberculosis and other infectious diseases
- The role of nutritional factors in the immune response to animal parasites that cause significant human disease, e.g., schistosomiasis, giardiasis, and cryptosporidiosis
- Infections in American hospitals, including the effect of surgery on immune function, hypercatabolism, and resistance to infection
- The modulating effects of specific nutrients (e.g., vitamins, trace elements, fatty acids, fiber, and amino acids) on basic immune function
- Immune responses, tolerance, and allergic reactions to specific foods such as milk, egg, and peanut

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National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)

<http://www.niams.nih.gov/>

Nutrition Research Spending (FY 2012):	\$17,788,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	3.3%

OVERVIEW

NIAMS conducts and supports basic and clinical research on many of the most debilitating diseases affecting the U.S. population. These include the many forms of arthritis and numerous diseases of the musculoskeletal system and skin, as well as research on the normal structure and function of joints, muscles, bones, and skin. NIAMS is the lead institute at NIH for research on osteoporosis and related bone diseases. Basic research involves a wide variety of scientific disciplines including immunology, genetics, molecular biology, biochemistry, physiology, virology, and pharmacology. Clinical research addresses the fields of rheumatology, orthopedics, bone endocrinology, sports medicine, and dermatology.

RESEARCH DIRECTIONS

NIAMS supports programs of research and research training in the fields of arthritis, musculoskeletal diseases, bone biology and bone diseases, muscle biology, and skin diseases. Examples of ongoing nutrition research supported by NIAMS are as follows:

- Studies on the function of diets and nutrients in osteoarthritis, autoimmune diseases such as rheumatic arthritis and lupus, inflammation, and joint pain
- Research on nutritional regulation of muscle growth and repair
- Investigation of dietary risk factors for bone loss and dietary intervention to prevent bone fractures

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Eunice Kennedy Shriver National Institute of Child Health and Human
Development (NICHD)
<http://www.nichd.nih.gov/>

Nutrition Research Spending (FY 2012):	\$115,181,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	8.8%

OVERVIEW

Consistent with the NICHD mission, the nutrition research program is focused on the continuum of human development, from conception through infancy, childhood, and adolescence. The nutrition research program emphasizes the evidence base needed to support domestic and global programs in health promotion and disease preventive through expanded understanding of the role of diet and nutrition in normal development as well as the myriad of conditions and stresses that can impact health.

Coordinated through the Pediatric Growth and Nutrition (formerly Endocrinology, Nutrition and Growth Branch: ENGB), the NICHD nutrition portfolio is multidisciplinary in nature, involving genetic, biochemical, developmental, anthropometric, behavioral, and cultural aspects of diet and nutrition. The historical focus of the NICHD nutrition extramural portfolio has been on several core areas:

- Nutrient requirements and best feeding practices for newborn infants including full term, premature, and low birth weight infants
- Lactation:
 - Mammary gland development and physiology
 - Ontogeny of breast milk
 - Human milk composition
 - Factors affecting prevalence of breastfeeding
 - Lactation performance and initiation and duration of breastfeeding
 - Social/behavioral factors influencing infant feeding choices
- Intake regulation
 - Social/cultural/behavioral aspects
 - Sensory response (i.e., development of hedonic response to food/dietary constituents)
- Growth and development
 - Physical (e.g., bone health)
 - Cognitive/behavioral

- Evaluation of the role of nutrition in ontogeny, prevention, and care of disease both acute and long-term
 - Prematurity
 - Infection, HIV, TB, malaria, diarrheal diseases
 - Non-communicable diseases (NCDs) including obesity, diabetes, bone disease, CVD risk, and cancer

Within this broad agenda, NICHD supports programs that address related issues such as:

- Impact of nutrition on reproduction
- Nutritional therapy of inborn errors of metabolism
- Assessment of nutritional status (BOND)
- Role of nutrition as both a predictor and an outcome of infectious (e.g., HIV, malaria, TB, diarrheal disease) and non-communicable diseases (e.g., diabetes, cardiovascular disease, cancer) and their treatment.

NICHD's interest in the above areas continues to expand. An area of high public health priority is best practices for feeding infants >6 months including the nutrient requirements for healthy growth and development and the modes for delivery of those nutrients to infants beyond the period of exclusive breastfeeding (> 6 months of age) via complementary feeding. Interest centers on metabolic processes in neonatal adaptation and on the role played by essential nutrients and other components of human milk. For example, NICHD has supported seminal work elucidating the effects of specific bioactive components of human milk, e.g., oligosaccharides, and lactoferrin on immune function and nutrient delivery.

NICHD continues to encourage research on cultural and behavioral determinants of nutritional individuality including studies of factors affecting the development of eating habits, taste, and olfaction; food avoidances; and behavior modification of dietary intakes.

NICHD plays a leadership role in efforts to understand the role of the fetal environment in subsequent health outcomes including development of adult diseases. In a similar vein, the portfolio is actively growing in studies of the origins of childhood obesity and other components of metabolic syndrome later in life. A particular focus of these efforts has been on those factors that contribute to documented health disparities in the US.

In the area of international nutrition research, NICHD has played a leadership role within the NIH community through the development of the trans-NIH Subcommittee on International Nutrition Research, a subcommittee of the NIH Nutrition Coordinating Committee. The current NICHD international nutrition research portfolio is coalesced around areas of traditional interest, e.g., the role and impact of specific micronutrients (e.g., vitamin A, zinc, and iron) in maternal and child health, as well as emerging programs in the role of nutrition in health promotion and disease prevention. Among the current priorities are the safety and effectiveness of common nutritional interventions in the context of

prevention, care, and treatment of infectious (e.g., HIV, malaria, TB) and non-communicable diseases in resource constrained settings. Through partnerships with other funding agencies (e.g., the Bill and Melinda Gates Foundation) and the global health community (as technical consultant to the World Health Organization), NICHD has played an important role in addressing a range of issues affecting global health programs and policies.

The ability to identify, develop, and implement biomarkers to assess nutrient status has emerged as a high priority for NICHD. This interest is exemplified by a new program called “Biomarkers of Nutrition for Development: BOND” which is intended to harmonize the process for discovery, development, and use of nutrient biomarkers across a range of applications and to develop the necessary evidence through new research to support the use and implementation of new biomarkers utilizing state-of-the-art technologies.

RESEARCH DIRECTIONS

Examples of current nutrition research supported by NICHD are studies of:

- The effects of vitamins on reproductive function and morphology, and the relationship between oral contraceptive use, cervical dysplasia, and folate levels
- Nutrient requirements during pregnancy and the mechanisms of placental transfer of essential nutrients, and the influence of these nutrients on normal and abnormal fetal development
- Events governing development of the gastrointestinal tract from fetal life to adulthood, and the role of human colostrum and milk in stimulating development of the gastrointestinal tract and protecting it from disease are of special interest
- Human milk, cow milk, soy milk, and synthetic formula to assess the requirements for optimal growth and development in normal and low birth weight infants, as well as development of the intestinal immune system and its relationship to autoimmune disease later in life
- The identification and role of non-nutritional compounds of human milk in terms of their specific effects on breast-fed infants
- The effect of micronutrient supplementation on reducing rates of infectious diseases and their attendant morbidity and mortality in infants and children living in low/middle income countries
- Behavioral, neurochemical, genetic, and hormonal factors in childhood obesity
- The influence of nutritional factors (e.g., iron) on cognitive development and behavior in both normal subjects and patients with inborn errors of metabolism
- Developing approaches to determine what the role of nutrition is in diseases such as HIV that would warrant nutritional interventions that would differ from the provision of a safe, high quality diet

- Application of a systems biology approach to evaluate the functional impact of single and multiple micronutrients in health and disease
- Safety of public health nutrition interventions in the context of infections such as HIV and malaria

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National Institute of Dental and Craniofacial Research (NIDCR)

<http://www.nidcr.nih.gov/>

Nutrition Research Spending (FY 2012):	\$10,516,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	2.6%

OVERVIEW

The mission of the National Institute of Dental and Craniofacial Research is to improve oral, dental, and craniofacial health through research, research training, and the dissemination of health information.

RESEARCH DIRECTIONS

Examples of current nutrition research encouraged and supported by the NIDCR are studies of:

- Maternal nutrition education and early childhood dental caries
- Rural older adults: oral health, diet, and quality of life
- The elucidation of particular mechanisms by which cranberry flavonoids disrupt the pathogenesis of dental caries
- Obesity and periodontal disease
- Periodontal infections and type 2 diabetes mellitus risk
- Nutritional epigenetics and orofacial development
- Purported role of human milk in early childhood caries development
- Chemoprevention with green tea polyphenon E (PPE) and EGFR-TKIs, in premalignant lesions of the head and neck

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National Institute on Deafness and Other Communication Disorders (NIDCD)

<http://www.nidcd.nih.gov/>

Nutrition Research Spending (FY 2012):	\$22,968,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	5.5%

OVERVIEW

NIDCD conducts and supports research and research training on normal mechanisms, as well as on diseases and disorders of hearing, balance, taste, smell, voice, speech, and language.

Chemical Senses—Taste and Smell

The chemical senses—more commonly known as taste, smell, and chemesthesis (the “feel” of a chemical; chemically provoked irritation)—enable us to use chemical signals to communicate with the environment and each other. For people, memories of taste and smell experiences are vivid and long lasting, and play an important role in our enjoyment of life.

Specialized cells in the human oral cavity can detect at least five basic taste qualities: sweet, sour, bitter, salty, and savory (umami). Taste cells may also respond to components of fat, to calcium, and perhaps to other chemical substances found in foods and beverages. Together with the nose and oral cavity, the tongue also plays a role in chemesthesis, a multimodal chemical sensitivity whose burning sensations signal the presence of chemical irritants such as capsaicin in hot peppers and toxic chemicals in the air.

Taste and Smell—Impact on Nutrition

The chemical senses are important for regulating food preferences and intake. They evolved to help humans and other animals survive in environments in which required nutrients were scarce and many plants contained poisonous, bitter compounds. Consequently, we seek out sweet, fatty foods and tend to reject the bitterness that characterizes many nutritious vegetables. Although this behavior made sense as humans were evolving, an almost limitless availability of high-calorie foods today can cause the normal function of taste and smell to lead to overconsumption. Over two-thirds of American adults are overweight, and one-third are obese.¹ Individuals who are overweight or obese are at risk for numerous serious conditions, including:

- type 2 diabetes,
- coronary heart disease and stroke,
- metabolic syndrome,

¹ NIDDK. [Overweight and Obesity Statistics, 2010.](#)

- certain types of cancer,
- sleep apnea,
- osteoarthritis,
- gallbladder disease,
- fatty liver disease, and
- pregnancy complications.²

People who have smell and taste disorders often have problems appreciating foods, and claim that food is less enjoyable. They may change their eating habits. Some may eat too little and lose weight, while others may eat too much and gain weight. In either case, there may be a long-term impact on overall health. Loss of the sense of taste or smell may also cause a person to add too much sugar or salt to make food taste better. This can be a problem for people with certain medical conditions such as diabetes or high blood pressure. Cancer treatments such as radiation and chemotherapy may also result in taste and smell loss. In severe cases, loss of the ability to taste and/or smell can lead to depression.

Humans seek out their preferred flavors in foods. Flavor involves interactions between the sensors that detect taste, smell, and chemesthesis in our foods and the parts of the brain that interpret, remember, or think about them. Flavor plays an important role in determining whether someone accepts a particular food and how much of it they choose to eat.³ Scientists studying the chemical senses are interested in learning more about the molecular and developmental bases for how flavors influence food intake and overall health.

Overconsumption of salt has become an area of particular concern due to the high levels of salt found in the processed foods that comprise the typical modern diet. Historical evidence suggests that for a long time human beings have consumed more salt than is physiologically necessary.⁴ Scientists are interested in learning whether there is another undetermined reason for this high salt intake. Too much salt raises blood pressure, and high blood pressure is related to numerous health conditions including heart disease, kidney failure, and stroke.⁵

Scientists are interested in learning more about how the body detects and responds to salt, fats, and other food characteristics that humans seek out. Data gained from these studies can help us determine new strategies to control overconsumption and improve health without reducing our enjoyment of

² NIDDK. [Do you know the health risks of being overweight?](#) 2007.

³ Beauchamp GK, Mennella JA. Flavor perception in human infants: Development and functional significance. *Digestion*. 2011; PMID: 21389721; PMCID: PMC3202923.

⁴ IOM. [Strategies to reduce sodium intake in the United States](#). Washington, DC: The National Academies Press; 2010.

⁵ NHLBI. [What is high blood pressure?](#) 2011.

food. Ongoing research is studying the structure and function of discrete taste, smell, and chemesthetic receptors, as well as their targets within the brain.

RESEARCH DIRECTIONS

NIDCD's Priority Areas in Taste and Smell Research

With the help of experts in the field of Chemical Senses, NIDCD has identified the following areas of research opportunity and areas where gaps in knowledge are hampering our understanding. For more detail, please refer to [NIDCD's Strategic Plan for Research 2012-2016](#).

Priority Area 1

Understanding Normal Function

- **Fundamental Biology of Chemosensory Function:** Continue to develop and apply new tools and approaches to delineate the organization of molecules, cells, and neural circuits underlying the function of the gustatory and olfactory systems
- **Peripheral and Central Bases of Flavor:** Understand the complex interactions between peripheral and central aspects of flavor perception, including retronasal or orthonasal olfaction, oral chemesthesis (chemical irritation), taste, oral somesthesia (temperature, texture), memory, and motivational state (e.g., hunger)
- **Chemosensory Receptors Outside of the Nose or Oral Cavity:** Localize, describe, and characterize the function of gustatory and olfactory receptors found in the gastrointestinal tract, lungs, or other areas outside the traditional locations in the oral and nasal cavities
- **Sentinel/Sensory Functions:** Describe how chemical senses help us avoid dangers such as spoiled or contaminated foods, how they detect potentially toxic chemicals in the environment and in our bodies, and how these protective functions can be damaged and regenerated
- **Genetic Aspects of Chemosensory Sensitivity:**
 - **Genomics:** Identify genes involved in the development and normal function of the taste and smell systems
 - **Variation:** Describe the normal variation in taste and smell sensitivity; identify the genes involved in order to understand what is outside the range of normal function; describe how such variation may relate to susceptibility for human communication disorders
 - **Experience:** Identify genes involved with storing memories of taste and smell; determine how experience influences future diet
 - **Epigenetics:** Describe how external factors (e.g., diet, stress) activate and deactivate genes

- Central Control of Taste and Smell: Characterize inputs from the central nervous system that adjust the sensitivity of taste and smell receptors or otherwise modulate sensory input, and determine how such activity may change depending on motivational or cognitive factors
- Develop Tools to Measure Taste and Smell Function: Provide practicing physicians with standardized tools to test taste and smell during physical exams or routine office visits
- Develop Novel Approaches to Alter Taste Function: Alter the levels of salt, sugar, and fat intake using innovative methods such as using artificial substitutes or changing learned flavor preferences
- Training: Emphasize training in certain classical areas of investigation (e.g., psychophysics, in vivo extracellular recordings, and quantitative electron microscopy) to ensure that taste and smell research can continue to be multidisciplinary

Priority Area 2

Understanding Diseases and Disorders

- Genetic Disorders: Clarify and classify taste and smell disorders caused mainly by significant genetic alterations (e.g., ciliopathies and channelopathies)
- Sinusitis/Rhinitis: Identify the molecular and cellular bases for loss of olfaction following nasal cavity or sinus infection, the most common cause of temporary and permanent olfactory loss
- Understand How the Activity of the Chemical Senses Can Lead to Excessive Consumption: Determine whether excessive calorie intake is affected by normal variation or altered function of taste and smell activity
- Epidemiology: Describe the incidence and prevalence of taste and smell loss and dysfunction; for example, as the population ages, determine how many more people report taste and smell problems that affect quality of life

Priority Area 3

Improving Diagnosis, Treatment, and Prevention

- Improved Diagnostic Tools and Pharmacological Treatments: Develop and validate tests to evaluate taste and smell function that are practical and affordable for use in the office setting; develop targeted drugs to treat taste and smell dysfunction, especially drugs which slow apoptosis (cell death) and promote regeneration
- Regenerative Medicine/Tissue Engineering: Increase understanding of the properties that enable stem cells in the peripheral taste and smell pathways to proliferate and differentiate, providing insights not only for the treatment of taste and smell loss but also for the treatment of other neurological diseases

- Enhancing the Clinical Enterprise: Promote clinical training in the chemical senses, and create targeted funding opportunities, to encourage more clinical research and interdisciplinary teams of clinicians and basic scientists

Priority Area 4

Improving Outcomes for Human Communication

- Translational Research: Translational Research is in its infancy in the chemical senses, due in part to the modest amount of clinical research that has been conducted; currently, no evidence-based preventive measures, interventions, or treatments are applied to taste and smell dysfunction; comparative effectiveness research is premature because of the lack of intervention and treatment strategies and decisions; this is a critical gap area in the chemical senses, especially since taste and smell loss become increasingly common in a population

Outlook

Nutrition is often a significant factor in studies of taste and smell, and NIDCD will continue to support chemosensory/nutrition research through the Taste and Smell Program. Because this research is often of trans-NIH relevance, NIDCD will continue to collaborate with other components of the NIH.

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National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)

<http://www2.niddk.nih.gov/>

Nutrition Research Spending (FY 2012):	\$517,288,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	26.6%

OVERVIEW

Since its creation in 1950, NIDDK's research responsibilities have included nutrition-related programs to prevent and treat disorders such as liver and biliary diseases; pancreatic diseases; gastrointestinal, digestion, and absorption disorders; diabetes; obesity; a variety of endocrine disorders; kidney and urological diseases; metabolic diseases, including cystic fibrosis; and eating disorders. NIDDK plays an important role in the study of nutritional factors relating to the etiology, prevention, and treatment of diabetes and digestive and kidney diseases. This research is supported by three divisions: the Division of Diabetes, Endocrinology, and Metabolic Diseases; the Division of Digestive Diseases and Nutrition; and the Division of Kidney, Urologic, and Hematologic Diseases.

Nutrition research training in the areas of nutrient metabolism, obesity, and energy regulation has been encouraged. NIDDK training and career development (F, T, and K funding mechanisms) are described in more detail at the following website: <http://www2.niddk.nih.gov/Funding/TrainingCareerDev/>.

The NIDDK Clinical Obesity Research Panel (CORP) is the successor to the National Task Force on Prevention and Treatment of Obesity, which was in existence from June 1991 until June 2003. The NIDDK CORP, composed of leading obesity researchers and clinicians, is charged with providing advice to the NIDDK Advisory Council on important clinical research needs related to obesity prevention and treatment, including their relative priority and costs, and identifies concepts for future clinical studies of obesity. The CORP serves in an advisory capacity to the [Weight-control Information Network](#) and may suggest topics for NIDDK-sponsored workshops and develop papers on topics related to clinical aspects of obesity. The CORP is placed organizationally under the auspices of the NIDDK Advisory Council, and a member of the NIDDK Advisory Council serves on the CORP as a liaison member.

The Weight-control Information Network (WIN) is an information service of the [National Institute of Diabetes and Digestive and Kidney Diseases](#) (NIDDK). WIN was established in 1994 to provide the general public, health professionals, the media, and Congress with up-to-date, science-based information on obesity, weight control, physical activity, and related nutritional issues.

WIN produces, collects, and disseminates materials on obesity, weight control, and nutrition. Win provides:

- [Publications](#), including fact sheets and brochures

- NIDDK's Clinical Weight Loss and Control Lecture Series videos
- Information on [Nutrition Obesity Research Centers \(NORCs\)](#)
- [WIN Notes](#), an electronic newsletter for health professionals features the latest information from NIDDK and other organizations on obesity, weight control, and related nutritional topics; WIN Notes also reports on activities of the NIDDK-sponsored Clinical Obesity Research Panel (CORP)
- [Sisters Together: Move More, Eat Better](#), WIN's national initiative to encourage Black women to maintain a healthy weight
- Additional WIN resources: <http://win.niddk.nih.gov/resources/index.htm>

RESEARCH DIRECTIONS

NIDDK fosters and supports other nutrition research and training in a number of areas of basic and clinical nutrition including:

- Research on dietary requirements (and safe levels) of many nutrients needed for health maintenance, proper growth and development, and a state of well-being at all ages and under various conditions, such as stress, drug use, nutrient imbalances, and changing activity levels
- Fundamental studies exploring nutritional factors that are active in absorption, transport, and metabolism, the biological control of such processes, and the identification of unrecognized roles of nutrients or their metabolites
- Research on dietary fiber to determine its chemical characteristics in order to determine its effects on intestinal microflora and food transit time; its interaction with nutrients, bile acids, and other substances in the gut; its effects on digestive enzymes and absorption; and the development of improved routine methods for analyzing its components
- Assessment of the requirement levels and metabolic roles of trace elements, with the help of reliable, newly developed analytical methods
- Research on relationships between genetic predisposition, induced metabolic changes, thermogenesis, environmental and physiological factors, and behavioral and lifestyle factors that result in obesity
- Research on the social, cultural, psychological, economic, environmental, and other determinants that influence eating patterns and dietary intake
- Clinical trials investigating approaches to prevent or treat obesity
- Research to evaluate environmental and policy interventions to promote healthy eating

- Studies to evaluate the role of various interventions such as liquid meal replacements, or the role of non-caloric beverages, in weight loss and maintenance
- Studies of the mechanism and efficacy of pharmacologic agents on energy balance and weight control
- Determination of the most effective individual, group, and community intervention strategies for weight management
- Investigation into the contribution of genetic and metabolic factors to obesity causation, including the molecular and genetic basis of energy metabolism and the nature of genetic factors associated with human obesity research to improve nutritional support to hospitalized patients, to improve nutritional status assessment methodology, and to acquire more information about the effects of disease states on the nutritional needs of patients
- Investigation of dietary modifications that may retard the rate of progression of end-stage renal disease, reduce the need for dialysis, or both
- Investigation of the mechanisms by which nutrients might affect renal function
- Studies of the causes of wasting malnutrition and other nutritional disorders that occur in renal failure
- Research on the interplay of dietary factors (such as calcium, vitamin D, phosphate, protein, and oxalate) in the etiology of renal stones
- Studies on hormones that regulate bone metabolism, nutrition and nutrient metabolism, and the maintenance of calcium balance, especially as related to osteoporosis and related bone disorders
- Studies of nutrients (and nutrient absorption) that influence bone metabolism
- Studies to elucidate the endocrine and metabolic basis of wasting in HIV infection and other chronic diseases
- Studies to elucidate the molecular basis for the metabolic and body composition changes seen in HIV infection and/or treatment
- Exploration of mechanisms for the development of gastrointestinal malabsorption in patients with HIV infection and investigations of other metabolic perturbations of nutrient metabolism, such as lipogenesis, to develop rational means of nutritional support of these patients
- Regulation of muscle mass and nitrogen balance in HIV infection.
- Studies on the role of calorie intake and physical activity, and subsequent weight control, in the prevention of type 2 diabetes

- Investigation of the metabolic mechanisms of intestinal and hepatic processing of dietary carbohydrate, and the effects of other nutrients and of fiber on carbohydrate metabolism
- Studies on the role of nutrients in gene regulation and expression
- Investigation of the effects of nutrient antioxidants in normal and abnormal cellular function and metabolism.
- Clinical research into nutrition-related areas such as cholesterol and pigment gallstones; inborn errors in bile acid metabolism; chronic hepatitis that evolves from autoimmune, viral, or alcoholic disease; and various liver diseases, such as Wilson's disease and portal hypertension
- Investigations into the control of appetite and satiety in animals and humans
- Funding of multiple Nutrition/Obesity Research Centers (NORCs), each conducting an intensive program of nutrition research
- Large multi-site clinical trials investigating health impact of weight loss in persons with type 2 diabetes
- Studies on the impact of bariatric surgery on health and on the mechanisms by which bariatric surgery may impact food intake, body weight, and obesity-related co-morbid conditions

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For more information on the NIDDK obesity research program and staff contact information please see: <http://www2.niddk.nih.gov/Research/ScientificAreas/Obesity/>.

National Institute on Drug Abuse (NIDA)

<http://www.drugabuse.gov/>

Nutrition Research Spending (FY 2012):	\$19,285,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	1.8%

OVERVIEW

NIDA's mission is to lead the Nation in bringing the power of science to bear on drug abuse and addiction. It supports research programs in basic, clinical, and translational sciences in the areas of genetics, functional neuroimaging, social neuroscience, medication and behavioral therapies, prevention, and health services, including effectiveness and cost-effectiveness research.

RESEARCH DIRECTIONS

NIDA encourages and supports a variety of nutrition-related research in human and animal subjects. Examples of NIDA-funded studies and areas of interest include:

- Identifying whether developmental exposure, including prenatal exposure, to specific nutrients modifies vulnerability for drug abuse
- Determining the role of nutritional condition, and the effect of specific nutrients, in preventing relapse to drug taking
- Understanding the influence of environmental exposures, including drugs of abuse and dietary components, on brain energy utilization
- Studies of nutritional and metabolic disorders in HIV-positive and HIV-negative drug users
- Studies of the addiction-like effects of highly palatable foods, and conversely, the role of appetite-regulating peptides such as orexin/hypocretin, leptin, and ghrelin in drug addiction
- Assessing the biological basis for co-morbidity of eating disorders and drug addiction
- Behavioral and neurobiological studies of reward processing and compulsive seeking of food and drug rewards
- Identifying biobehavioral mechanisms underlying appetite changes associated with smoking cessation, including the role of genetic factors and gender differences

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National Institute of Environmental Health Sciences (NIEHS)

<http://www.niehs.nih.gov/>

Nutrition Research Spending (FY 2012):	\$73,018,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	9.6%

OVERVIEW

The National Institute of Environmental Health Sciences (NIEHS) is located in Research Triangle Park, North Carolina. The mission of NIEHS is to discover how the environment affects people in order to promote healthier lives. As an institute, NIEHS is uniquely positioned to investigate the interplay between environmental exposures, human biology, genetics, and common diseases that limit longevity and quality of life.

Research conducted over the past several decades indicates clearly that disease risk is multifactorial, influenced by diverse elements that include exposure to environmental agents, diet/nutrition, and genetic susceptibility. From a pathophysiological standpoint, many environmental exposures affect common biological pathways that are linked to disease, such as oxidative stress and inflammation; these same pathways are likely to be influenced by diet and nutritional status. Thus, variability in disease risk in response to environmental exposures within populations may be at least partially attributable to unmeasured variation in nutritional status and/or other components of the diet. The NIEHS nutrition research portfolio includes projects aimed at: 1) more clearly identifying those dietary components that influence the trajectory or onset of environmentally-linked disease, and 2) increasing our understanding of the mechanisms underlying the interplay between diet/nutrition and exposure to environmental agents and disease risk. A better understanding of mechanisms underlying these complex interactions will enable the development of effective primary prevention and intervention strategies to mitigate environmentally-induced diseases.

RESEARCH DIRECTIONS

Applied Research

- Expand existing studies to look at the interplay between diet and health outcomes, including secondary data analysis in on-going studies
- Encourage studies to test or develop novel tools or methods of exposure assessment for future studies that will look at diet and environment
- Refine and validate dietary assessments for exposure characterized subpopulations
- Add new environmental measures or assays to existing dietary studies

- Develop new analytical methods or models to incorporate multiple layers of data (diet and environment)

Basic Research

- Identify pathways during critical life stages where the effects of dietary parameters will have the most pronounced effects on health outcomes
- Use well established animal models of environmentally-induced disease to study the interaction of diet with environmental toxicants
- Identify key molecular targets in relevant biologic pathways that could be useful in prevention/intervention studies

Examples of Nutrition Research Supported by NIEHS

- The impact of dietary fat on arsenic-induced hepatotoxicity
- Silica-accelerated autoimmunity and the role of dietary lipids
- The epigenetic effects of dietary polyphenols and zeronal
- Diet, physical activity, and the relationship between air pollution and CVD
- Health disparities that can lead to both poor nutrition and increased environmental exposures in vulnerable populations
- The combined effects of high fat diet and air pollutants on inflammation and insulin resistance
- Increased neurotoxicity of manganese in individuals with iron deficiency
- Combined exposures to poor nutrition and chlorinated organics that lead to obesity, CVD, and cancer
- Nutrients that modify the toxicity of methylmercury in a fish-eating population
- Ameliorating environmental risk factors for autism with folate supplements
- The protective effects of fatty acids against phthalate-induced inflammation
- The protective effects of selenium against neurological damage
- The impact of serum vitamin D levels on susceptibility to inhaled pollutants in urban children with asthma
- The impact of prenatal diet on how air pollutants affect neurodevelopment
- The endocrine disrupting effects of genistein in soy formula

- The efficacy of chemoprevention interventions with broccoli sprouts in populations exposed to high levels of food (aflatoxins) and air-borne toxicants (alkylanilines and polycyclic aromatic hydrocarbons)
- Prevention of UV-induced carcinogenesis by cyanidin-3-glucoside

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National Institute of General Medical Sciences (NIGMS)

<http://www.nigms.nih.gov/>

Nutrition Research Spending (FY 2012):	\$45,899,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	1.9%

OVERVIEW

The principal mission of NIGMS is to support fundamental research that undergirds all biomedical investigations. The major focus of the institute is on research concerned with expanding knowledge of fundamental biological structure and function at the cellular and molecular levels. Extramural studies supported by the institute include investigations in the biophysical sciences and the physiological sciences, in particular the response of the whole body to trauma; the structure and function of the cell; the basic mechanisms of heredity; and the molecular aspects of the interactions between therapeutic drugs and agents and their target cells, tissues, or organs.

The majority of the nutrition-related research supported by NIGMS is in its trauma and burn injury program area, which focuses on the mechanisms involved in the body's systemic responses to trauma. Thus, research on the role of nutrition in decreasing morbidity rates and morbidity for patients who suffer serious trauma or burn injury is of significant interest to the institute. NIGMS-supported scientists are exploring nutritional requirements following severe trauma and sepsis, new concepts in parenteral therapy, branched chain amino acid feeding during injury, and cellular function during septic and hemorrhagic shock. In addition, studies are being supported that are investigating the cellular changes and mechanisms responsible for the protein wasting associated with nutritional deprivation.

RESEARCH DIRECTIONS

The following areas of basic research on diseases and traumatic injury are being investigated:

- The role of diet in organ and cellular responses to cytokines
- Changes in metabolic patterns and nutritional requirements following severe injury
- Hormonal imbalance following injury and its effects on metabolism
- Mechanisms involved in producing a protein catabolic state after injury
- Adaptive regulation of nutrient transport by the gut; transport appears to be governed by nutrient-receptor proteins on specific cell surfaces
- Mechanism of suppression of lipoprotein lipase activity by tumor necrosis factor (TNF)

- Determining components of the host defense system (neutrophils, immunomodulators, etc.) that are important in preventing bacterial translocation
- Identifying receptors that recognize serum proteins carrying galactosyl sugar residues, including hormones that regulate the rate and extent of nutrient uptake and processing in the liver
- The importance of enteral versus parenteral feeding
- The inclusion of glutamine and human growth hormone in nutritional regimes
- Interactions between and regulation of arginine, citrulline, ornithine, and urea metabolism following trauma or sepsis

Research supported by NIGMS serves to establish the foundation of new knowledge needed to make advances in the understanding of biological processes and many diseases. Those investigations that are nutrition-related will help to provide the concepts and relevant information necessary to develop new treatments, particularly in the area of traumatic injury, and hence, serve to decrease morbidity and mortality.

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National Institute of Mental Health (NIMH)

<http://www.nimh.nih.gov/index.shtml>

Nutrition Research Spending (FY 2012):	\$31,665,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	2.1%

OVERVIEW

The mission of NIMH is to transform the understanding and treatment of mental illnesses through basic and clinical research, paving the way for prevention, recovery, and cure.

RESEARCH DIRECTIONS

The Eating Disorders Research Program

This program supports research on the etiology, core features, longitudinal course, and assessment of eating disorders. It also supports studies focusing on the elucidation of risk factors for the onset or recurrence of psychopathology. Intervention development studies grounded in findings from psychopathology are supported as the next step in the translation of basic research to effective treatments.

Areas of Emphasis

- Identifying phenotypes and endophenotypes as new targets for assessment and therapeutics that are emerging from integrative genetics, pathophysiology, and psychopathology research
- Conducting translational research on cognition, emotion and affect dysregulation to find new strategies for treating eating disorders
- Identifying ways in which genetic and environmental factors interact to raise or lower risk for eating disorders
- Developing new preventive and treatment interventions targeted to specific cognitive, emotional, or interpersonal components of the psychopathology of eating disorders
- Using modern psychometric and statistical theories to advance fundamental conceptualizations of nosology and consequent approaches toward more focused assessment and treatment of the many dimensions and subtypes that constitute eating disorders

Mechanisms of Biobehavioral and Mood Dysregulation Program

This program supports research on the mechanisms underlying mood dysregulation in childhood-onset mental disorders. Of particular interest is research that identifies genetic factors and/or aspects of neural structure or function associated with dysregulated mood, anxiety, emotional processing, and biobehavioral processes such as sleep and appetite. Examples of areas of interest include positive and negative affect, suicidality, anxiety, fear, mood cycling, sleep/circadian rhythm disturbance, appetite dyscontrol, and motivation.

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Mechanisms of Biobehavioral and Mood Dysregulation Program

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National Institute on Minority Health and Health Disparities (NIMHD)

<http://www.nimhd.nih.gov/>

Nutrition Research Spending (FY 2012):	\$25,040,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	9.1%

OVERVIEW

Over the last two decades the overall health of the Nation has improved significantly. Yet, racial/ethnic minorities and other medically underserved populations continue to experience an alarmingly disproportionate burden of illness, disability, and premature death. These populations typically have a shorter life expectancy and higher rates of cardiovascular disease, cancer, infant mortality, obesity, asthma, diabetes, stroke, and mental illness.

Established by the Minority Health and Health Disparities Research and Education Act of 2000, Public Law 106-525, the National Center on Minority Health and Health Disparities (NCMHD) was re-designated in FY 2010 as the NIMHD, and all the responsibilities of NCMHD authorized under Public Law 106-525 were transferred to the institute in accordance with the Patient Protection and Affordable Care Act (Public Law 111-148). In accordance with this Act, NIMHD is charged to plan, review, coordinate, and evaluate minority health and health disparities research activities conducted by NIH institutes and centers (ICs). NIMHD seeks to understand health disparities and implement strategies to eradicate them across the nation. As health disparities transcend many diverse areas of biomedical science and public health, NIMHD works independently and in partnership with all of the NIH institutes and centers and with other federal agencies and grassroots organizations in minority and other medically underserved communities to:

- Conduct and support basic, clinical, social sciences, and behavioral health disparities research and research training
- Understand and eradicate health disparities
- Strengthen the infrastructure of qualified research institutions that conduct health disparities research and training
- Establish Centers of Excellence (COE) in health disparities research, research training, and outreach
- Provide Endowment Grants at Centers of Excellence established by NIMHD or under HRSA Section 736
- Repay the educational loans of culturally competent researchers who agree to do health disparities research and clinical research

- Increase the numbers of minorities and other medically underserved populations in health disparities research
- Promote outreach and the dissemination of health information to minorities and other medically underserved populations

RESEARCH DIRECTIONS

NIMHD supports nutrition research that informs the treatment and prevention of diseases disproportionately impacting on medically underserved populations. The following research goals are currently being pursued:

- Reduce risk factors for chronic disease and rebuilding local food economies through community-based participatory research with church youth in rural North Carolina
- Understand the relationship between socio-cultural factors, dietary intake, and individual psychosocial factors to increase the success of obesity interventions among black women residing in Alabama
- Explore the use a refined smectite clay as a potential aflatoxin enterosorbent for populations at risk for dietary exposure to aflatoxin
- Determine the impact of obesity and diabetes during pregnancy on racial disparities in maternal and infant outcomes at the population level for blacks, Hispanics, and non-Hispanic whites in South Carolina

Outlook: NIMHD collaborates annually with the NIH Director and NIH institute and center directors to update the [NIH Strategic Plan and Budget](#). This document serves as a guiding mechanism for the conduct and support of all NIH minority and other health disparities research. Our concerted efforts will ensure continued progress toward more effective methods of treating and preventing diseases disproportionately impacting on minorities and other medically underserved populations.

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National Institute of Neurological Disorders and Stroke (NINDS)

<http://www.ninds.nih.gov/>

Nutrition Research Spending (FY 2012):	\$25,008,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	1.5%

OVERVIEW

Created in 1950, NINDS conducts, fosters, coordinates, and guides research on the causes, prevention, diagnosis, and treatment of neurological disorders and stroke, and supports basic research in related scientific areas. The mission of NINDS is to reduce the burden of neurological disease—a burden borne by every age group, by every segment of society, and by people all over the world.

RESEARCH DIRECTIONS

Rapid and recent progress in brain research has yielded new understanding of the interaction between nutrition and the nervous system. NINDS nutrition research supports studies examining the role of specific nutrients in a number of neurological disorders and in neuronal injury. Additionally, the influence of brain-specific regulatory factors on obesity and other eating disorders is being investigated.

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National Institute of Nursing Research (NINR)

<http://www.ninr.nih.gov/>

Nutrition Research Spending (FY 2012):	\$8,717,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	6.0%

OVERVIEW

The mission of NINR is to promote and improve the health of individuals, families, communities, and populations. NINR supports clinical and basic research, and research training, to build the scientific foundation for clinical practice, prevent disease and disability, manage and eliminate symptoms caused by illness, and enhance end-of-life and palliative care. The research focus encompasses health promotion and disease prevention, quality of life, health disparities, and end-of-life/palliative care. NINR seeks to extend nursing science by integrating the biological and behavioral sciences, employing new technologies to research questions, improving research methods, and developing the scientists of the future. The research mission of NINR is available at: www.ninr.nih.gov/AboutNINR/NINRMissionandStrategicPlan/.

RESEARCH DIRECTIONS

NINR views nutrition as an essential component of health promotion, disease prevention, and self and symptom management; and, as such, supports a broad range of research in the science of nutrition. The nutrition research portfolio at NINR crosses the spectrums of disease, populations, and the lifespan. Recent examples of research areas include studies elucidating the effects of nutrition in gestation, including conditions such as pre-eclampsia; examining breastfeeding outcomes and feeding difficulties in pre-term infants and their growth and long-term health outcomes; designing and testing tailored, nutritional interventions for low income and diverse populations; exploring nutritional connections and molecular mechanisms in abdominal and gastrointestinal pain for children and adults; implementing nutrition interventions in diabetes and kidney disease management; and, developing and testing a variety of interventions for prevention and treatment of obesity and cardiovascular disease. NINR has co-sponsored several nutrition-related funding announcements and recently sponsored an announcement (PA-10-236: Health Promotion Among Racial and Ethnic Minority Males) to promote research into the development and testing of innovative interventions to reduce risk factors associated with the leading causes of morbidity and mortality (e.g., smoking, poor nutrition, and alcohol use) among racial and ethnic minority men in rural, urban, and nontraditional settings.

These studies highlight NINR's long-term commitment to health promotion, patient empowerment in the management of illness and recovery, and the reduction of disease and disability. Findings from these studies will add to the growing body of literature related to nutrition.

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Office of the Director

<http://www.nih.gov/icd/od/>

Nutrition Research Spending (FY 2012):	\$50,495,000
Nutrition as Percentage of Total IC Obligations (FY 2012):	3.5%

Office of the Director (OD) includes Office of Disease Prevention, Office of Dietary Supplements, Office of Behavioral and Social Sciences Research, Office of Research on Women's Health, Office of Extramural Research, Office of Research Infrastructure Programs, SEPA, and the NIH Roadmap/Common Fund.

Office of Behavioral and Social Sciences Research (OBSSR)

<http://www.obssr.od.nih.gov/>

OVERVIEW

Congress established the OBSSR in the Office of the Director, NIH, in recognition of the key role that behavioral and social factors often play in illness and health. OBSSR's mission is to stimulate behavioral and social sciences research throughout NIH and to integrate these areas of research more fully into others of the NIH health research enterprise, thereby improving our understanding, treatment, and prevention of disease.

OBSSR officially opened on July 1, 1995. The major responsibilities of the office are:

- To provide leadership and direction in the development, refinement, and implementation of a trans-NIH plan to increase the scope of and support for behavioral and social sciences research.
- To inform and advise the NIH director and other key officials of trends and developments having significant bearing on the missions of the NIH, DHHS, and other federal agencies.
- To serve as the principal NIH focus for research on the importance of behavioral, social, and lifestyle factors in the causation, treatment, and prevention of disease; and to advise and consult these topics with NIH scientists and others within and outside the federal government.
- To develop a standard definition of "behavioral and social sciences research," assess the current levels of NIH support for this research, and develop an overall strategy for the uniform expansion and integration of these disciplines across NIH institutes and centers.
- To develop initiatives designed to stimulate research in the behavioral and social sciences arena, integrate a bio-behavioral perspective across the research areas of the NIH, and encourage the study of behavioral and social sciences across NIH's institutes and centers.
- To initiate and promote studies to evaluate the contributions of behavioral, social, and lifestyle determinants in the development, course, treatment, and prevention of illness and related public health problems.

- To provide leadership in ensuring that findings from behavioral and social sciences research are disseminated to the public.
- To sponsor seminars, symposia, workshops, and conferences at the NIH and at national and international scientific meetings on state-of-the-art behavioral and social sciences research.

RESEARCH DIRECTIONS

OBSSR's vision is to bring together the biomedical, behavioral, and social science communities to work more collaboratively to solve the pressing health challenges facing our nation. OBSSR's plan includes facilitating: (a) the next generation of basic behavioral and social sciences research; (b) trans-disciplinary "team science" that integrates biomedical, behavioral, and social-ecological perspectives; (c) research that looks at how individual, group, and societal factors interact; and (d) the translation, implementation, dissemination, and maintenance of best practices and proven strategies that reduce the burden of chronic disease and eliminate inequities in health and health care.

Consumption of a nutritious diet is of primary importance for health. Moreover, dietary intake is a behavior that is strongly influenced by social factors such as family, peer group, community, socioeconomic status, culture, and education. Recent OBSSR activities related to research on dietary intake, particularly as related to obesity, include the following: 1) Participation in the National Collaborative on Childhood Obesity Research (NCCOR) and co-lead NCCOR's Envision network on modeling to inform policy to reduce childhood obesity www.nccor.org/envision; 2) Co-sponsorship of ORBIT (Obesity Related Behavioral Intervention Trials), a program led by the National Heart, Lung, and Blood Institute, aimed at developing new approaches to improve obesity-related behaviors based on basic behavioral and social science findings; 3) In collaboration with numerous NIH Institutes and Centers, issuance of PA-11-063, *Translating Basic Behavioral and Social Science Discoveries into Interventions to Improve Health-Related Behaviors (R01)*; and 4) OBSSR provides co-funding for, and sits on the Steering Committee of, the Johns Hopkins Global Center on Childhood Obesity—*Where Systems Science Meets Public Health*, <http://www.jhgcco.org/> (PI: Youfa Wang; grant # U54-HD-070725-01).

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Office of Dietary Supplements (ODS)

<http://ods.od.nih.gov/>

OVERVIEW

The mission of the ODS at the National Institutes of Health (NIH) is to strengthen knowledge and understanding of dietary supplements by evaluating scientific information, stimulating and supporting research, disseminating research results, and educating the public to foster an enhanced quality of life and health for the U.S. population.

Dietary supplements are widely used in the United States by people who want to maintain or improve their health or reduce their risk of illness. Americans spend over \$25 billion per year on more than 50,000 products containing vitamins and minerals, herbs and botanicals, and other ingredients such as glucosamine, fish oils, and probiotics.

The Dietary Supplement Health and Education Act (DSHEA) of 1994 defined dietary supplements as products intended to supplement the diet. DSHEA also established ODS at NIH in the U.S. Department of Health and Human Services (HHS), which began operations in November 1995. Its director is Paul M. Coates, PhD

Scientists are studying dietary supplements to determine their value in maintaining good health. ODS supports this research to assess the benefits and risks of dietary supplements and communicates the results of this research to scientists, health professionals, and consumers.

RESEARCH DIRECTIONS

Examples of ODS Activities

Research Support

<http://ods.od.nih.gov/Research/funding.sec.aspx>

The majority of the ODS budget supports research on dietary supplements in collaboration with many NIH institutes and centers. Since its inception, ODS has provided more than \$140 million in co-funding more than 850 grants. ODS has also funded hundreds of conferences, workshops, symposia, and meetings on dietary supplements that help inform and direct research efforts for ODS and NIH.

Botanical Research Centers

http://ods.od.nih.gov/Research/Dietary_Supplement_Research_Centers.aspx

Since 1999, ODS has funded multidisciplinary centers to study the health effects of botanicals (products made from plants) at academic research institutions across the United States. These centers identify and characterize botanical ingredients, assess their biological activity and bioavailability (amount that the body can use); evaluate their effects in cells, animals, and people; help select botanicals to test in clinical trials; and provide a rich environment for training and career development.

Analytical Methods and Reference Materials

<http://ods.od.nih.gov/Research/AMRMPProgramWebsite.aspx>

More than 50,000 dietary supplements are estimated to be available in the U.S. marketplace, but in many cases, reliable analytical methods are not available to assess the quality of their ingredients. This ODS initiative enhances collaborative efforts to develop and validate analytical methods and develop reference materials for commonly used dietary supplements.

Evidence-Based Reviews

http://ods.od.nih.gov/Research/Evidence-Based_Review_Program.aspx

ODS sponsors systematic reviews of the efficacy and safety of dietary supplements and identification of research needs. Reviewed topics have included ephedra, omega-3 fatty acids, vitamin D, soy, berries and B vitamins, and multivitamin/mineral supplements.

Training and Career Development

<http://ods.od.nih.gov/Research/Training.aspx>

ODS provides support for postdoctoral students and scientists at universities across the United States, as well as in government agencies. This program's goal is to expand the number of well-qualified researchers who investigate dietary supplements, with an emphasis on training young investigators, minorities, and women.

Dietary Supplement Research Practicum

<http://odspracticum.od.nih.gov>

ODS's annual course for faculty and students provides a thorough overview of the issues, concepts, and controversies about dietary supplements and supplement ingredients.

Population Studies

This program evaluates dietary supplement use, including the assessment of biological measures of supplement exposure and associated health effects in representative populations. This effort will build the capacity of ODS to analyze population data, such as those from the National Health and Nutrition Examination Survey (NHANES). Initial work has focused on vitamin D through collaborative research projects with several universities and government agencies.

Vitamin D Initiative

ODS leads efforts to advance knowledge of vitamin D's importance to health, and to accurately measure vitamin D levels in foods and vitamin D status in the U.S. population. ODS has funded the development of standard reference materials to assess this nutrient, and has sponsored evidence-based reviews to inform updated recommended dietary allowances and safe levels of intake for vitamin D. ODS also sponsors conferences and workshops on vitamin D and leads a federal working group to identify and meet research needs.

Dietary Supplement Ingredient and Label Databases

http://ods.od.nih.gov/Health_Information/Dietary_Supplement_Ingredient_and_Labeling_Databases.aspx

With its federal partners, ODS is supporting the analysis of dietary supplements to determine the actual amount of nutrients they contain. ODS is also exploring the feasibility of developing a Web-based database to catalog the labels of all dietary supplements sold in the United States.

Communications

<http://ods.od.nih.gov/HealthInformation/makingdecisions.sec.aspx>

ODS develops and disseminates information about the latest science on dietary supplements. This information is provided through the ODS Web site, fact sheets, e-newsletters, exhibits, and staff presentations at professional and consumer-focused meetings.

Information Resources on Dietary Supplements

ODS makes accurate and up-to-date scientific information about dietary supplements available to researchers, health care providers, and the public, through the following resources:

- Dietary Supplement Fact Sheets
<http://ods.od.nih.gov/factsheets/list-all>
These overviews of dietary supplement ingredients (including vitamin D, black cohosh, and omega-3 fatty acids) are written for varied audiences, including researchers, health care providers, and consumers.
- PubMed Dietary Supplement Subset
http://ods.od.nih.gov/Research/PubMed_Dietary_Supplement_Subset.aspx
The subset is designed to limit search results to citations from a broad spectrum of dietary supplement literature including vitamin, mineral, phytochemical, ergogenic, botanical, and herbal supplements in human nutrition and animal models.
- Computer Access to Research on Dietary Supplements (CARDS)
http://ods.od.nih.gov/Research/CARDS_Database.aspx
This searchable database provides information on federally funded research projects pertaining to dietary supplements.
- Dietary Supplement Ingredient Database (DSID)
<http://dietarysupplementdatabase.usda.nih.gov>
This database provides the amount of nutrients in some dietary supplements based on chemical analysis.

ODS Newsletters

http://ods.od.nih.gov/News/ODS_Update.aspx

ODS offers three free electronic publications through the ODS listserv

- *ODS Update* includes news about ODS programs, staff publications and presentations, dietary supplement fact sheets, databases, meetings, and exhibits. It is emailed to the ODS listserv four to six times a year.
- *The Scoop*, a consumer-focused e-newsletter, is sent out quarterly. Each issue has a slightly different theme such as multivitamins or dietary supplements and aging.
- ODS informs the listserv about timely announcements through the *Special Supplement*.

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Warren Grant Magnuson Clinical Center (CC)

<http://clinicalcenter.nih.gov/>

OVERVIEW

The Clinical Center at the National Institutes of Health (NIH) in Bethesda, Maryland, is part of the NIH's intramural science research program and is the nation's largest hospital devoted entirely to clinical research. It is a national resource that makes it possible to rapidly translate scientific observations and laboratory discoveries into new approaches for diagnosing, treating, and preventing disease.

Approximately 1,500 studies are in progress at the NIH Clinical Center. Most are Phase I or Phase II clinical trials.

More than 350,000 patients, from all 50 states and throughout the world, have participated in clinical research at the Clinical Center since it opened in 1953.

The Clinical Center promotes translational research—that is, the transference of scientific laboratory research into applications that benefit patient health and medical care. The "bench-to-bedside" approach adopted in 1953 locates patient care units in close proximity to cutting-edge laboratories conducting related research. This facilitates interaction and collaboration among clinicians and researchers. Most important, patients and families in the Clinical Center benefit from the cutting-edge technologies and research, and the compassionate care that are the signature of the NIH.

The Mark O. Hatfield Clinical Research Center was opened in 2005. The facility houses inpatient units, day hospitals, and research labs and connects to the original Warren Grant Magnuson Clinical Center. Together, the Magnuson and Hatfield buildings form the NIH Clinical Center. They serve the dual role of providing humane and healing patient care and the environment clinical researchers need to advance clinical science. It was named in honor of Senator Mark O. Hatfield of Oregon, who supported medical research throughout his congressional career.

The 870,000-square-foot Hatfield building has 240 inpatient beds and 82 day-hospital stations. This arrangement can be easily adapted to allow more inpatient beds and fewer day-hospital stations, or vice versa, because the new facility's design is highly flexible.

Nutrition Research Services

Clinical Research Dietitians are available to consult with Clinical Center (CC) investigators regarding the planning, design, and implementation of nutrition-related components of proposed research protocols. Dietitians recommend optimal methodologies to assure valid and reliable data and assist with data collection, analysis, interpretation, and manuscript preparation. Dietitians advise on the benefit and appropriateness of adding nutrition services to existing research protocols.

Nutrition Research Services include:

- Research Meals
Purpose: to control food intake as either a constant or a variable to meet protocol needs.
- Dietary Intake and Eating Behavior Assessments
Purpose: to quantify energy and nutrient intake for a defined period of time; to characterize eating behaviors.
- Body Composition Analysis
Purpose: to assess a patient's lean and fat mass.
- Nutrition Counseling
Purpose: to provide nutrition education and counseling to research subjects as part of protocol requirements.

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APPENDICES

APPENDIX A: DNRC 2011 & 2012 STAFF ACTIVITIES

(Return to report)

Scientific Meeting Planning and Coordination

- Sponsored or co-sponsored scientific meetings (see detailed list on [page 22](#))
- Provided support for NIH and non-NIH professional meetings and workshops in terms of event program planning, framing the research questions and topics of importance, reviewing abstracts, chairing scientific sessions, identifying expert speakers in the nutritional sciences, and preparing proceedings and final reports based on the deliberations
- Pre- and Probiotic Work Group Leadership Role
- Nutrition and Food Safety Interest Group Leadership Role

National Nutrition Policy Coordination

- Solicited comments from NIH ICs and coordinated NIH reviews of proposed rules and draft federal regulation announcements
- Federal Steering Committee role for:
 - Evaluating the Diet-Related Scientific Literature for Children from Birth-24 Months
 - Dietary Reference Intakes
- Staff joined the Dietary Guidelines Management Team in preparation for *Dietary Guidelines for Americans* 2015 initiative
- Reviewed General Services Administration (GSA) Nutrition and Sustainability standards and participates in ongoing Federal Food Service Guidelines working group
- Co-leads the *Healthy People 2020*, Nutrition and Weight Status topic area

NIH Nutrition Research Communication

- Chaired Nutrition Coordinating Committee (NCC) meetings
- Maintained a monthly calendar of events
- Produced the *NIH Nutrition Quarterly*, the DNRC's nutrition newsletter
- Led HNRIM database development, maintenance, and reporting
- Authored or co-authored nutrition monitoring publications
- Served as expert peer reviewers of journal manuscripts, federal agency reports, and proceedings of scientific meetings
- Served as on-site mentors and practicum experience coordinators for public health graduate students
- Initiated and conducted original research in nutrition, public health, and behavioral science (staff publication list available at: www.dnrc.nih.gov)

Dietary Guidance Reviews and Nutrition Education

- NIH Nutrition Education Subcommittee (NES): The DNRC chairs the NES and the NES Chair is a member of the HHS/USDA Dietary Guidance work group
- Performed dietary guidance reviews of new nutrition education resources (approximately two dozen annually)
- Produced 2011 and 2012 DNRC National Nutrition Month Brochures that were disseminated to the NIH community and posted on the DNRC website
- Participated in the revision of the *Dietary Guidance Review Handbook for Authors and Reviewers* to reflect the 2010 DGA recommendations

Federal and NIH Worksite Wellness Initiatives

- Member, NIH Health and Wellness Council (HWC): Contributed to the development of the HWC charter, strategic plan, and communications initiative
- Planned and participated in nutrition education and wellness events for NIH employees including the annual Health and Wellness Expo, NIH Safety Expo, and Take your Child to Work
- Served as the primary HWC nutrition resource for HWC events
- Communicated with NIH café contractor regarding nutrition awareness and education events, and efforts to improve the nutritional quality of food served in NIH cafés

National Nutrition Month Activity Planning

- Created a desk-to-desk brochure delivered to all NIH employees
 - 2011 theme: [Food for Thought—Good Nutrition Begins at Home](#)
 - 2012 theme: [Get Your Plate in Shape](#)
- Current and past brochures available for download at: <http://www.dnrc.nih.gov/education-monthly.asp>
- Planned and conducted two open mini-symposia programs in 2011 and 2012 during National Nutrition Month; [Communicating Nutrition Messages: Strategies for Diverse Audiences](#) in 2011 and [Dietary Sodium: Recommendations, Evidence, Challenges, and Applications for Clinical Guidance](#) in 2012
 - Collaborated with NIH partners and contractors to feature special nutrition education events for the NIH community during National Nutrition Month and to commemorate National Registered Dietitian Day

Support Roles within the NIH Community

- Coordinated NIH nutrition community response for the 2011 and 2012 BRAIN submission on the topic of nutrition in chronic disease
- Contributed to NIH newsletters on timely topics in the field of nutrition and responded to press inquiries on nutrition topics upon request
- Identified nutrition scientists and researchers to speak to the NIH community on timely health and nutrition research topics

- Participated in science fairs and education events that were sponsored by other NIH ICs
- Facilitated research information exchanges between federal agency partners in the areas of diet, health, obesity, and physical activity
- Provided representation to the NIH iodine interest group, BOND, NFNAP, NCCOR, and PRCC

DNRC Staff List

Van Hubbard, MD, PhD—Director

Pamela Starke-Reed, PhD—Deputy Director

Yvonne Chow—Program Specialist

Rachel Fisher, MS, MPH, RD—Nutritionist

Sheila Fleischhacker, PhD, JD—Senior Public Health & Science Policy Advisor

Sharon Frazier—Secretary

Jim Krebs-Smith, MPH, RD—HNRIM Coordinator

Crystal McDade-Ngutter, PhD—Health Program Specialist

Margaret McDowell, PhD, RD—Research Nutritionist/Nutrition Education Coordinator

Karen Regan, MS, RD—Nutritionist

APPENDIX B: 2011 & 2012 FUNDING OPPORTUNITY ANNOUNCEMENTS

(Return to report)

The following table identifies Program Announcements (PAs) and Request for Applications (RFAs) with possible nutrition relevance. The funding opportunities were identified through a key word search of “nutrition” in the *NIH Guide for Grants and Contracts*, FY 2011/2012. The list is in order of release date. PAs are open for up to three years.

PAs and RFAs with Possible Relevance to Nutrition FY 2011 and FY 2012			
Announcement Number	Issuing Organization	Release Date	Title
PAR-10-276	NICHD	9/2/2010	Dual Purpose with Dual Benefit: Research in Biomedicine and Agriculture Using Agriculturally Important Domestic Species (R01)
PAR-10-277	FIC	9/7/2010	Planning Grant for Chronic, Non-Communicable Diseases and Disorders Across the Lifespan: Fogarty International Research Training Planning Award (NCD-LIFESPAN) (D71)
RFA-HD-10-018	NICHD	9/7/2010	Limited Competition, Role of Prenatal Alcohol Exposure in SIDS and Stillbirth (U01)
PAR-10-279	NIH	9/14/2010	Robotics Technology Development and Deployment [RTD2] (R43)
PAR-10-278	FIC	9/15/2010	Limited Competition for the Global Research Initiative Program, Basic/Biomedical Sciences (R01)
RFA-DK-10-011	NIDDK	9/15/2010	Planning Grants for Translating Chronic Kidney Disease (CKD) Research into Improved Clinical Outcomes (R34)
RFA-HD-10-001	NICHD	9/23/2010	Systems-Oriented Pediatric Obesity Research and Training (SPORT) Center of Excellence (U54)
PA-10-290	NCI	9/29/2010	Research on Malignancies in the Context of HIV/AIDS (R01)
PA-10-291	NCI	9/29/2010	Research on Malignancies in the Context of HIV/AIDS (R21)
RFA-HD-10-017	NICHD	10/7/2010	Identifying and Understanding Effective Interventions for Orphans and Vulnerable Children Affected by HIV/AIDS (R01)
RFA-ES-11-006	NIEHS	10/29/2010	Deepwater Horizon Disaster Research Consortia: Health Impacts and Community Resiliency (U19)
PAR-11-030	FIC	11/12/2010	Limited Competition: Brain Disorders in the Developing World: Research Across the Lifespan (R01))
PAR-11-031	FIC	11/12/2010	Brain Disorders in the Developing World: Research Across the Lifespan (R21)
RFA-DE-12-001	NIDCR	11/16/2010	NIDCR Behavioral or Social Intervention Planning and Pilot Data Grant (R34)
PAR-11-037	FIC	11/17/2010	Limited Competition: Fogarty International Research Collaboration - Basic Biomedical (FIRCA-BB) Research Award (R03)
RFA-HD-12-169	NICHD	11/19/2010	Specialized Cooperative Centers Program in Reproduction and Infertility Research (U54)
PAR-11-043	NIDDK	11/22/2010	NIDDK Program Project Applications (P01)
PA-11-047	NIDA	11/30/2010	Women and Sex/Gender Differences in Drug and Alcohol Abuse/Dependence (R01)
PA-11-048	NIDA	11/30/2010	Women and Sex/Gender Differences in Drug and Alcohol Abuse/Dependence (R21)

PA-11-049	NIDA	11/30/2010	Women and Sex/Gender Differences in Drug and Alcohol Abuse/Dependence (R03)
PA-11-053	NICHD	12/2/2010	Studies in Neonatal Hypoglycemia (R01)
PA-11-054	NICHD	12/2/2010	Studies in Neonatal Hypoglycemia (R03)
PA-11-055	NICHD	12/2/2010	Studies in Neonatal Hypoglycemia (R21)
PAR-11-057	NICHD	12/3/2010	Developmental Pharmacology (R01)
PA-11-073	NCI	12/9/2010	Mitochondria in Cancer Epidemiology, Detection, Diagnosis and Prognosis (R01)
PA-11-074	NCI	12/9/2010	Mitochondria in Cancer Epidemiology, Detection, Diagnosis and Prognosis (R21)
PAR-11-079	NCI	12/13/2010	Cancer Prevention Research Small Grant Program (R03)
RFA-DK-10-014	NIDDK	1/4/2011	Lifestyle Interventions in Overweight and Obese Pregnant Women Consortium (U01)
RFA-DK-10-015	NIDDK	1/4/2011	Lifestyle Interventions in Overweight and Obese Pregnant Women Consortium Research Coordinating Unit (RCU) (U01)
PAR-11-091	NICHD	1/5/2011	Indo-US Program on Contraception and Reproductive Health Research (CRHR) [R01]
PAR-11-092	NICHD	1/5/2011	Indo-US Program on Maternal and Child Health and Human Development Research (MCHDR) (R03)
PAR-11-094	NICHD	1/5/2011	Scientific Meetings for Creating Collaborative Research Teams under the Indo-US Program for Maternal Child Health and Human Development Research (MCHDR) [R13]
RFA-HD-10-022	NICHD	1/10/2011	Intellectual and Developmental Disabilities Research Centers 2011 (P30)
RFA-ES-11-002	NIEHS	1/20/2011	Dietary Influence on the Human Health Effects of Environmental Exposures (R21)
PA-11-096	NIH	1/24/2011	PHS 2011-02 Omnibus Solicitation of the NIH, CDC, FDA and ACF for Small Business Innovation Research Grant Applications (Parent SBIR [R43/R44])
PA-11-104	NINR	1/24/2011	Reducing Health Disparities Among Minority and Underserved Children (R01)
PA-11-105	NINR	1/24/2011	Reducing Health Disparities Among Minority and Underserved Children (R21)
PAR-11-106	NINDS	2/3/2011	International Neuroscience Fellowship (F05)
PA-11-123	NIA	2/16/2011	Translational Research to Help Older Adults Maintain their Health and Independence in the Community (R01)
PA-11-124	NIA	2/16/2011	Translational Research to Help Older Adults Maintain their Health and Independence in the Community (R21)
RFA-LM-11-001	NLM	2/28/2011	NLM Institutional Training Grants for Research Training in Biomedical Informatics (T-15)
PAR-11-152	NCI	3/15/2011	The Role of Microbial Metabolites in Cancer Prevention and Etiology (U01)
PAR-11-156	NCI	3/16/2011	Basic Cancer Research in Cancer Health Disparities (U01)
PAR-11-157	NIDDK	3/16/2011	NIDDK Multi-Center Clinical Study Cooperative Agreement (U01)
PA-11-165	NHLBI	3/17/2011	Nutrition and Diet in the Causation, Prevention, and Management of Heart Failure (R01)
PA-11-166	NHLBI	3/17/2011	Nutrition and Diet in the Causation, Prevention, and Management of Heart Failure (R21)
RFA-DK-11-002	NIDDK	3/17/2011	Diabetes Research Centers (P30)
PAR-11-170	NIEHS	3/18/2011	Role of Environmental Chemical Exposures in the Development of Obesity, Type 2 Diabetes, and Metabolic Syndrome (R01)
PAR-11-171	NIEHS	3/18/2011	Role of Environmental Chemical Exposures in the Development of Obesity, Type 2 Diabetes, and Metabolic Syndrome (R21)

PA-11-178	NIAAA	3/24/2011	Circadian Rhythms and Alcohol-induced Tissue Injury (R01)
PA-11-179	NIAAA	3/24/2011	Circadian Rhythms and Alcohol-induced Tissue Injury (R21)
RFA-DK-11-004	NIDDK	4/1/2011	Cystic Fibrosis Research and Translation Core Centers (P30)
RFA-HD-12-189	NICHHD	4/4/2011	Child Health Research Career Development Award (CHRCDA) Program (K12)
RFA-AI-11-003	NIAID	4/5/2011	NIH/PEPFAR Collaboration for Implementation Science and Impact Evaluation (R01)
RFA-HL-12-005	NHLBI	4/14/2011	Clinical Hematology and Transfusion Medicine Research Career Development Program (K12)
RFA-FD-11-013	FDA	5/4/2011	Food Protection Rapid Response Team and Program Infrastructure Improvement Implementation Project (U18)
PA-11-211	NHLBI	5/10/2011	Virtual Reality Technologies for Research and Education in Obesity and Diabetes (R01)
PA-11-212	NHLBI	5/10/2011	Virtual Reality Technologies for Research and Education in Obesity and Diabetes (R21)
RFA-HL-12-020	NHLBI	5/10/2011	Virtual Reality Technologies for Research and Education in Obesity and Diabetes (R43/R44)
RFA-HL-12-024	NHLBI	5/10/2011	Virtual Reality Technologies for Research and Education in Obesity and Diabetes (R41/R42)
RFA-DK-11-011	NIDDK	5/11/2011	NIDDK Short-Term Education Program for Underrepresented Persons (STEP-UP) (R25)
RFA-HD-12-200	NICHHD	5/24/2011	Global Network for Women's and Children's Health Research (U10)
RFA-HD-12-201	NICHHD	5/24/2011	Global Network for Women's and Children's Health Research Data Coordinating Center (U01)
PAR-11-221	NIDDK	6/2/2011	Collaborative Interdisciplinary Team Science in NIDDK Research Areas (R24)
PAR-11-225	NICHHD	6/9/2011	Patient Safety Research During Neonatal Care (R01)
PAR-11-226	NICHHD	6/9/2011	Patient Safety Research During Neonatal Care (R03)
PAR-11-227	NICHHD	6/9/2011	Patient Safety Research During Neonatal Care (R21)
RFA-HD-12-207	NICHHD	6/9/2011	Perinatally HIV-Infected Youth In Africa and Asia (R01)
RFA-NS-12-004	NINDS	6/9/2011	Spinal Muscular Atrophy (SMA) Biomarker Study (U01)
RFA-HD-12-187	NICHHD	6/14/2011	Male Reproductive Health Research (MRHR) Career Development Program [K12]
RFA-HD-12-192	NICHHD	6/14/2011	Safe and Effective Instruments and Devices for Use in the Neonatal Intensive Care Units (SBIR) [R43]
RFA-HD-12-193	NICHHD	6/14/2011	Safe and Effective Instruments and Devices for Use in the Neonatal Intensive Care Units (STTR) [R41]
PAR-11-241	NICHHD	6/22/2011	Limited Competition: Addressing Health Disparities in Maternal and Child Health through Community-Based Participatory Research (R03)
RFA-OD-11-003	ORWH	6/28/2011	Specialized Centers of Research (SCOR) on Sex Differences (P50)
RFA-DK-11-012	NIDDK	7/1/2011	Nutrition Obesity Research Centers (P30)
PAR-11-258	NICHHD	7/19/2011	Pregnancy in Women with Disabilities (R01)
PAR-11-259	NICHHD	7/19/2011	Pregnancy in Women with Disabilities (R21)
RFA-DK-11-015	NIDDK	8/1/2011	Diabetes Research Centers (P30)
PAR-11-284	NICHHD	8/2/2011	Health Promotion for Children With Physical Disabilities Through Physical Activity and Diet: Developing An Evidence Base (R21)
PAR-11-288	NICHHD	8/2/2011	Health Promotion for Children With Physical Disabilities Through Physical Activity and Diet: Developing An Evidence Base (R01)
PA-11-308	NIAAA	8/12/2011	Secondary Analysis of Existing Alcohol Epidemiology Data (R01)

PA-11-309	NIAAA	8/12/2011	Secondary Analysis of Existing Alcohol Epidemiology Data (R03)
PAR-11-314	OBSSR	8/17/2011	Systems Science and Health in the Behavioral and Social Sciences (R01)
PAR-11-315	OBSSR	8/17/2011	Systems Science and Health in the Behavioral and Social Sciences (R21)
PA-11-310	FDA	8/19/2011	FDA Small Scientific Conference Grant Program (R13)
RFA-RM-11-008	Roadmap	8/23/2011	Human Heredity and Health in Africa (H3Africa): Collaborative Centers (U54)
RFA-RM-11-009	Roadmap	8/23/2011	Human Health and Heredity in Africa (H3Africa): Research Grants (U01)
RFA-RM-11-010	Roadmap	8/23/2011	Human Heredity and Health in Africa (H3Africa): Bioinformatics Network (U41)
PA-11-326	NICHD	9/1/2011	Gamete Quality in Natural and Assisted Reproduction (R01)
RFA-MH-12-130	NIMH	9/2/2011	Basic Research on Decision Making: Cognitive, Affective, and Developmental Perspectives (R01)
RFA-HD-12-210	NICHD	9/6/2011	NIH/PEPFAR Collaboration for Advancing Implementation Science in Prevention of Maternal-Child HIV Transmission (PMTCT) (R01)
RFA-AA-12-004	NIAAA	9/8/2011	Collaborative Initiative on Fetal Alcohol Spectrum Disorders (CIFASD) (U01)
RFA-AA-12-005	NIAAA	9/8/2011	Collaborative Initiative on Fetal Alcohol Spectrum Disorders (CIFASD) (U24)
RFA-RM-11-011	Roadmap	9/14/2011	Human Heredity and Health in Africa (H3Africa): H3Africa Biorepository Grants. (UH2/UH3)
PAR-11-338	NIDCR	9/16/2011	NIDCR Clinical Trial or Biomarker Clinical Evaluation Study Planning Grant (R34)
RFA-DK-11-018	NIDDK	9/20/2011	Small Business Innovation Research to Develop New Therapeutics and Monitoring Technologies for Type 1 Diabetes (T1D) Towards an Artificial Pancreas [(SBIR) (R43/R44)]
RFA-DK-11-024	NIDDK	9/21/2011	Small Business Innovation Research to Develop New Methods and Technologies able to Identify Individuals at Risk of Developing Type 1 Diabetes [T1D] (R43)
PAR-11-346	NCI	9/22/2011	Interventions for Health Promotion and Disease Prevention in Native American Populations (R01)
PAR-11-352	NIDDK	9/30/2011	Pilot and Feasibility Clinical Research Grants in Kidney or Urologic Diseases (R21)
PAR-12-003	FIC	10/14/2011	Limited Competition: Framework Programs for Global Health Innovation (D43)
PAR-12-020	NIDDK	11/17/2011	NIDDK Mentored Research Scientist Development Award (K01)
PA-12-025	NIAAA	11/18/2011	Alcohol impairment of immune function, host defense and tissue homeostasis (R01)
PA-12-026	NIAAA	11/18/2011	Alcohol impairment of immune function, host defense and tissue homeostasis (R21)
PAR-12-032	ORWH	11/18/2011	Myalgic Encephalomyelitis/Chronic Fatigue Syndrome: Etiology, Diagnosis, Pathophysiology, and Treatment (R01)
PAR-12-033	ORWH	11/18/2011	Myalgic Encephalomyelitis/Chronic Fatigue Syndrome: Etiology, Diagnosis, Pathophysiology, and Treatment (R21)
PAR-12-034	NICHD	11/21/2011	Developmental Mechanisms of Human Structural Birth Defects (P01)
PAR-12-039	NCI	11/28/2011	Small Grants Program for Cancer Epidemiology (R03)
PAR-12-047	NIDDK	12/1/2011	NIDDK Education Program Grants (R25)
PAR-12-058	NIMH	12/13/2011	Solicitation of Assays for High Throughput Screening (HTS) to Discover Chemical Probes (R01)

PA-12-061	NINR	12/15/2011	Maternal Nutrition and Pre-pregnancy Obesity: Effects on Mothers, Infants and Children (R01)
PA-12-088	NIH	1/31/2012	PHS 2012-02 Omnibus Solicitation of the NIH, CDC, FDA and ACF for Small Business Innovation Research Grant Applications (
PAR-12-093	NICHD	2/2/2012	Biomedical and Behavioral Research Innovations to Ensure Equity (BRITE) in Maternal and Child Health (R15)
PAR-12-095	NCI	2/2/2012	Basic Cancer Research in Cancer Health Disparities (U01)
PAR-12-116	FDA	3/9/2012	Innovative Food Defense Program (R18)
PAR-12-120	NIDCR	3/15/2012	NIDCR Small Research Grants for Oral Health Data Analysis and Statistical Methodology Development (R03)
PA-12-125	NIDDK	3/19/2012	Secondary Analyses in Obesity, Diabetes and Digestive and Kidney Diseases (R21)
PA-12-135	NIA	3/21/2012	Translational Research at the Aging/Cancer Interface (TRACI) (R21)
PA-12-136	NIA	3/21/2012	Translational Research at the Aging/Cancer Interface (TRACI) (R01)
PA-12-139	NIDDK	3/23/2012	Pilot and Feasibility Clinical Research Studies in Digestive Diseases and Nutrition (R21)
PAR-12-140	NCI	3/26/2012	Role of the Microflora in the Etiology of Gastro-Intestinal Cancer (R01)
PA-12-146	NIAAA	3/29/2012	Mechanisms of Alcohol-associated Cancers (R01)
PA-12-147	NIAAA	3/29/2012	Mechanisms of Alcohol-associated Cancers (R21)
PAR-12-172	NIDDK	4/24/2012	Translational Research to Improve Obesity and Diabetes Outcomes (R18)
PAR-12-173	NIDDK	4/24/2012	Planning Grants for Translational Research to Improve Obesity and Diabetes Outcomes (R34)
PA-12-179	NIDDK	5/2/2012	Exploratory/Developmental Clinical Research Grants in Obesity (R21)
PA-12-184	NIEHS	5/11/2012	Role of Environmental Chemical Exposures in the Development of Obesity, Type 2 Diabetes and Metabolic Syndrome (R21)
PA-12-185	NIEHS	5/11/2012	Role of Environmental Chemical Exposures in the Development of Obesity, Type 2 Diabetes and Metabolic Syndrome (R01)
RFA-DK-12-502	NIDDK	6/1/2012	Limited Competition for the Continuation of Look AHEAD (Action for Health in Diabetes) Consortium (U01)
PAR-12-197	NIDDK	6/6/2012	Improving Diet and Physical Activity Assessment (R21)
PAR-12-198	NIDDK	6/6/2012	Improving Diet and Physical Activity Assessment (R01)
RFA-RM-12-005	Roadmap	6/13/2012	Human Heredity and Health in Africa (H3Africa): Ethical, Legal, and Societal Issues (ELSI) Research Program (U01)
PA-12-232	NIAAA	7/10/2012	Stem Cells and Alcohol-induced Tissue Injuries (R21)
PA-12-233	NIAAA	7/10/2012	Stem Cells and Alcohol-induced Tissue Injuries (R01)
PA-12-234	NIAAA	7/10/2012	Unconventional Roles of Ethanol Metabolizing Enzymes, Metabolites, and Cofactors in Health and Disease (R21)
PA-12-235	NIAAA	7/10/2012	Unconventional Roles of Ethanol Metabolizing Enzymes, Metabolites, and Cofactors in Health and Disease (R01)
RFA-HD-13-016	NICHD	7/30/2012	Cooperative Multicenter Reproductive Medicine Network (U10)
PA-12-258	NIDDK	8/8/2012	New Technologies for the Study of Lymphatics in the Digestive and Urinary Systems (R43/R44)
PAR-12-257	NIDDK	8/8/2012	Time-Sensitive Obesity Policy and Program Evaluation (R01)
PAR-12-259	NIDDK	8/8/2012	Lymphatics in Health and Disease in the Digestive, Urinary, Cardiovascular and Pulmonary Systems (R01)
PAR-12-265	NIDDK	8/16/2012	Ancillary Studies to Major Ongoing Clinical Research Studies to Advance Areas of Scientific Interest within the Mission of the NIDDK (R01)

RFA-AG-13-007	NIA	8/16/2012	Molecular Mechanisms of Circadian Clocks in Aging Tissues (R01)
RFA-ES-12-006	NIEHS	8/22/2012	Transgenerational Inheritance in Mammals After Environmental Exposure (TIME) (R01)
RFA-ES-12-007	NIEHS	8/22/2012	Transgenerational Inheritance in Mammals After Environmental Exposure (TIME) (R21)
RFA-RM-12-006	Roadmap	8/22/2012	Human Heredity and Health in Africa (H3Africa): Collaborative Centers (U54)
RFA-RM-12-007	Roadmap	8/22/2012	Human Heredity and Health in Africa (H3Africa): H3Africa Research Grants (U01)
RFA-RM-12-008	Roadmap	8/22/2012	Human Heredity and Health in Africa (H3Africa): H3Africa Biorepository Grants. (UH2/UH3)
RFA-DK-12-017	NIDDK	8/31/2012	Expansion of Symptoms of Lower Urinary Tract Dysfunction Research Network (LURN) (U01)
PA-12-280	NIDA	9/10/2012	HIV/AIDS, Drug Use, and Vulnerable Populations in the US (R21)
PA-12-281	NIDA	9/10/2012	HIV/AIDS, Drug Use, and Vulnerable Populations in the US (R01)
RFA-DK-12-010	NIDDK	9/11/2012	Novel Interventions to Reduce Morbidity and Mortality of Hemodialysis Patients Safety and Other Early Phase Studies (U01)
RFA-HD-13-008	NICHD	9/11/2012	Prevention of HIV Transmission/Acquisition through a better understanding of Reproductive Health (R01)
RFA-HD-13-009	NICHD	9/11/2012	Prevention of HIV Transmission/Acquisition through a better understanding of Reproductive Health (R03)
PAR-12-285	NIDDK	9/14/2012	Limited Competition: Small Grant Program for NIDDK K01/K08/K23 Recipients (R03)
PA-12-293	NIDA	9/25/2012	Drug Abuse Aspects of HIV/AIDS (R01)
PA-12-294	NIDA	9/25/2012	Drug Abuse Aspects of HIV/AIDS (R03)
PA-12-295	NIDA	9/25/2012	Drug Abuse Aspects of HIV/AIDS (R21)
PAR-12-298	NCI	9/26/2012	Cancer Center Support Grants (CCSGs) for NCI-designated Cancer Centers (P30)
PA-12-291	NIAAA	9/28/2012	Effects of In Utero Alcohol Exposure on Adult Health and Disease (R01)
PA-12-292	NIAAA	9/28/2012	Effects of In Utero Alcohol Exposure on Adult Health and Disease (R21)
PA-12-299	NIDDK	9/28/2012	Ancillary Studies of Acute Kidney Injury, Chronic Kidney Disease, and End Stage Renal Disease Accessing Information from Clinical Trials, Epidemiological Studies, and Databases (R01)

APPENDIX C: NIH NUTRITION COORDINATING COMMITTEE CONTACTS

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Below is a list of individuals who serve as members of the [NH Nutrition Coordinating Committee](#). When applicable, the alternate member is included. NCC liaisons from other Federal Agencies are also included in the table. See [section VIII](#) of this report for more detailed information about nutrition as a component of each IC's research mission.

NIH Nutrition Coordinating Committee Contacts			
Institute/Center/Division	Member & Alternate	Phone	Building
Chair NIH Division of Nutrition Research Coordination	Van S. Hubbard, MD, PhD	301-594-8827	2 DEM-631
Vice Chair NIH Division of Nutrition Research Coordination	Pamela Starke-Reed, PhD	301-594-8805	2 DEM-633
National Cancer Institute (NCI)	Sharon Ross, PhD	301-594-7547	EPN-3157
National Eye Institute (NEI)	Shefa Gordon, PhD Ellen Liberman, PhD	301-496-4308 301-451-2020	31/6A23 5635 Fishers Lane
National Heart, Lung, and Blood Institute (NHLBI)	Kathryn McMurry, MS Janet De Jesus, MS, RD	301-594-2094 301-496-5344	31/4A-17E 31/4A-17D
National Human Genome Research Institute (NHGRI)	Derek Scholes, PhD	301-402-0955	31/4B-09

National Institute on Aging (NIA)	Judith Hannah, PhD Lyndon Joseph, PhD	301-435-0044 301-496-6761	GWY/3C307 GWY/3C307
National Institute on Alcohol Abuse and Alcoholism (NIAAA)	Rosalind Breslow, PhD Peter Gao, PhD	301-594-6231 301-443-6106	PKLN/2081 5635FL/2102
National Institute of Allergy and Infectious Diseases (NIAID)	Paul Sato, MD, MPH	301-435-3750	6700B/5218
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)	Xibin Wang, PhD Joan A. McGowan, PhD	301-451-3884 301-594-5055	1 DEM-862 45/5AS-43
<i>Eunice Kennedy Shriver</i> National Institute of Child Health and Human Development (NICHD)	Gilman Grave, MD Daniel Raiten, PhD	301-496-5593 301-435-7568	61E-4B11 61E-2A01
National Institute on Deafness and Other Communication Disorders (NIDCD)	Baldwin Wong, BS Susan Sullivan, PhD	301-496-2426 301-451-3841	31/3C-27 EPS/400C
National Institute of Dental and Craniofacial Research (NIDCR)	Mary Cutting, MS, RAC	301-594-5391	1 DEM-630
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)	Robert Kuczmarski, PhD Mary Evans, PhD	301-496-8354 301-594-4578	2 DEM-665 2 DEM-673
National Institute on Drug Abuse (NIDA)	Susan Volman, PhD	301-435-1315	NSC/4253
National Institute of Environmental Health Sciences (NIEHS)	Kimberly Ann Gray, PhD	919-316-4668	Mail Drop EC-21 (1)
National Institute of General Medical Sciences (NIGMS)	Scott D. Somers, PhD	301-594-3827	45/2AS-49

National Institute of Mental Health (NIMH)	Mark Chavez, PhD	301-443-8942	NSC-7101
National Institute on Minority Health and Health Disparities (NIMHD)	Derrick Tabor, PhD	301-594-8950	2 DEM-841
National Institute of Neurological Disorders and Stroke (NINDS)	Merrill Mitler, PhD Preeti Hans, BS	301-496-9964 301-496-5737	NSC-2116 NSC-2147
National Institute of Nursing Research (NINR)	Paul Cotton, PhD, RD	301-402-6423	1 DEM-710
Center for Scientific Review (CSR)	Robert Garofalo, PhD Nancy Sheard, PhD	301-435-1043 301-408-9901	II RKLG/6156 II RKLG/5199
Clinical Center (CC)	Amber Courville, PhD, RD Madeline Michael, MPH, RD	301-594-8061 301-496-3312	10/1078 B2 10/1078 B2
Fogarty International Center (FIC)	Marya Levintova, PhD Kenneth Bridbord, MD	301-435-3620 301-496-1653	31/B2-C11 31/B2-C32
National Center for Complementary and Alternative Medicine (NCCAM)	Linda Duffy, PhD	301-594-1285	2 DEM-401
National Library of Medicine (NLM)	Milton Corn, MD	301-496-4725	38/2E17
Office of Behavioral and Social Sciences Research (OBSSR)	Dana Sampson, MS, MBA	301-451-9514	31/B1C19
Office of Dietary Supplements (ODS)	Paul M. Coates, PhD Cindy Davis, PhD	301-435-2920 301-435-2920	6100/3B01 6100/3B01
Office of Disease Prevention (ODP)	Barry Portnoy, PhD	301-402-4337	6100/2B03

NIH Nutrition Coordinating Committee Agency Liaisons

Agency	Member & Alternate	Phone	Building
Agency for Healthcare Research and Quality (AHRQ)	Iris Mabry-Hernandez, MD	301-427-1605	(2)
Assistant Secretary for Planning and Evaluation (ASPE)	Amanda Cash, DrPH	202-260-0362	(3)
Department of Defense (DoD)	Andrew Young, PhD	508-233-5141	(4)
Food and Drug Administration (FDA)	Mary Poos, PhD Shirley Blakely, PhD	240-402-1761 301-436-1916	(5) (6)
Indian Health Service (IHS)	CAPT Tammy Brown, MPH, RD Jean Charles-Azure, MPH, RD	505-248-4319 301-443-0576	(7) (8)
Health Resources and Services Administration (HRSA)	Michele Lawler, MS, RD Sharon Adamo, MS, MBA, RD	301-443-8152 301-443-0879	PKLN/18-31 PKLN/11A-22
National Center for Chronic Disease Prevention and Health Promotion/ Division of Nutrition, Physical Activity, and Obesity (CDC, DNPAO)	Kelley Scanlon, PhD, RD	770-468-5867	(9)
National Center for Chronic Disease Prevention and Health Promotion /National Center for Health Statistics (CDC, NCHS)	Namanjeet Ahluwalia, PhD	301-458-4372	(10)

Office of Disease Prevention and Health Promotion (ODPHP), DHHS	Holly McPeak, MS Rick Olson, MD, MPH	240-453-8267 240-453-8251	(11)
U.S. Department of Agriculture, Agricultural Research Services (USDA, ARS)	David Klurfeld, PhD John Finley, PhD	301-504-4675 301-504-5381	(12)
U.S. Department of Agriculture, National Institute of Food and Agriculture (USDA, NIFA)	Deirdra Chester, PhD, RD, LD/N Dionne Toombs, PhD	202-401-5178 202-401-2138	(13)

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6. Office of Policy, Planning and Strategic Management, CFSAN, Harvey W. Wiley Building, Room 2B009, 5100 Paint Branch Parkway, College Park, MD 20740
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10. Division of Health and Nutrition Examination Surveys, NCHS, CDC; 3311 Toledo Rd., Hyattsville, MD 20782
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13. 13800 9th Street, SW, Washington, DC 20004

Note: List current as of May 2013

APPENDIX D: DIETARY GUIDANCE REVIEWS

NIH NUTRITION EDUCATION SUBCOMMITTEE ACTIVITIES IN 2011-2012

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A Congressional mandate was enacted in 1990 stipulating that all nutrition education materials for the general public undergo joint U.S. Department of Health and Human Services (DHHS) and U.S. Department of Agriculture (USDA) dietary guidance review to ensure scientific and technical accuracy and consistency with the *Dietary Guidelines for Americans* (DGAs). Dietary guidance reviews ensure that agencies within DHHS and USDA speak with one voice with regard to nutrition information and advice for the general public. The NIH Nutrition Education Subcommittee (NES), a subcommittee of the NIH Nutrition Coordinating Committee (NCC), is the focal point for dietary guidance reviews of NIH nutrition education publications and related materials for the public. The 2012 NES roster is composed of 12 members from 8 NIH institutes, centers, and offices who have expertise in the nutritional sciences. The NES performs the initial dietary guidance reviews of nutrition education materials produced within the NIH and may be asked to review nutrition education materials produced by non-NIH, DHHS, and USDA agencies. The NES completed dietary guidance reviews of the following NIH materials in 2011-2012.

Additional education materials can be found on the DNRC Web site:

<http://www.dnrc.nih.gov/education.asp>

Materials Reviewed by the NES Committee in 2011 and 2012	
NIH Institute, Center, or Office	Name of Material and Distribution Information
DNRC	2011 National Nutrition Month Brochure— <i>“Food for Thought-Good Nutrition Begins at Home”</i> http://dnrc.nih.gov/pdf/nnm2011-foodforthought.pdf
DNRC	2012 National Nutrition Month Brochure— <i>“Get Your Plate in Shape”</i> http://dnrc.nih.gov/pdf/NNMBrochure_032012.pdf
NHLBI	<i>“Young Hearts. Strong Starts Pediatric Risk Reduction Website and Fact Sheets”</i> — for parents of children ages 0-21 years who are at elevated cardiovascular risk. This information will be added to the NHLBI health information site. http://www.nhlbi.nih.gov/health/
NHLBI	We Can! (Ways to Enhance Children's Activity & Nutrition) and the Children's Museum of Manhattan (CMOM) Obesity Prevention Curriculum—The material will be made available in the future in web-based and print format. http://www.nhlbi.nih.gov/health/public/heart/obesity/wecan/
NHLBI	<i>“Your Guide to Physical Activity and Your Heart”</i> —This information will be added to the NHLBI health information site. http://www.nhlbi.nih.gov/health/
NHLBI	<i>“The Heart Truth Healthy Eating Tip Sheet”</i> —The tip sheet will be added to the NHLBI health information site. http://www.nhlbi.nih.gov/health/

NIA	Updated NIH Senior Health material titled <i>"Eating Well as You Get Older"</i> http://nihseniorhealth.gov/eatingwellasyougetolder/benefitsofeatingwell/01.html
NIA	<i>"What's On Your Plate? Food Choices for Healthy Aging"</i> http://www.nia.nih.gov/health/publication/whats-your-plate-smart-food-choices-healthy-aging
NIAMS	Four fact sheets on muscle, skin, bone, and joint health developed for youth in grades 8-12—The information will be posted on the NIAMS Health Information Portal http://www.niams.nih.gov/Health_Info/default.asp
NICHD	Updated <i>"Media Smart Youth"</i> curriculum—The material will be posted on the MSY Web site. http://www.nichd.nih.gov/msy/
ODS	<i>"Iodine Quick Facts"</i> Sheet http://ods.od.nih.gov/factsheets/Iodine-QuickFacts/
ODS	<i>"Multivitamin/mineral Supplements Quick Facts"</i> http://ods.od.nih.gov/factsheets/MVMS-QuickFacts/
ODS	<i>"Vitamin B6 Quick Facts"</i> factsheet http://ods.od.nih.gov/factsheets/VitaminB6-QuickFacts/
ODS	<i>"Vitamin A Quick Facts"</i> factsheet http://ods.od.nih.gov/factsheets/list-all/

APPENDIX E: ACRONYMS

<u>Acronym</u>	<u>Name</u>
ARS	USDA Agricultural Research Service
BOND	Biomarkers of Nutrition for Development Program
BRAIN	Biomedical Research Advanced Information Network
CARDS	Computer Access to Research on Dietary Supplements
CC	NIH Clinical Center
CDC	Centers for Disease Control and Prevention
CNPP	USDA Center for Nutrition Policy Promotion
CSR	Center for Scientific Review
DGAC	Dietary Guidelines Advisory Committee
DHHS	U.S. Department of Health and Human Services
DNRC	NIH Division of Nutrition Research Coordination
DoD	Department of Defense
DRI	Dietary Reference Intakes
DSID	Dietary Supplements Ingredients Database
EIG	NIH Exercise Interest Group
FDA	U.S. Food and Drug Administration
FIC	John E. Fogarty International Center for Advanced Study in Health Sciences
FOA	Funding Opportunity Announcement
GSA	General Services Administration
HINTS	Health Information National Trends Survey
HNRIM	Human Nutrition Research Information Management System
IBNMRR	Interagency Board on Nutrition Monitoring and Related Research
ICHNR	Interagency Committee on Human Nutrition Research
IOM	NAS Institute of Medicine
mHealthIIG	NIH mHealth Inter-Institute Interest Group
NAS	The National Academy of Science
NCATS	National Center for Advancing Translational Sciences
NCC	NIH Nutrition Coordinating Committee
NCCAM	National Center for Complementary and Alternative Medicine
NCCOR	National Collaboration on Child Obesity Research
NCHS	National Center for Health Statistics
NCI	National Cancer Institute
NEI	National Eye Institute
NFNAP	National Food and Nutrient Analysis Program
NHANES	National Health and Nutrition Examination Survey
NHLBI	National Heart, Lung, and Blood Institute
NHGRI	National Human Genome Research Institute
NIA	National Institute on Aging
NIAAA	National Institute on Alcohol Abuse and Alcoholism
NIAID	National Institute of Allergy and Infectious Diseases
NIAMS	National Institute of Arthritis and Musculoskeletal and Skin Diseases
NIBIB	National Institute of Biomedical Imaging and Bioengineering
NICHD	<i>Eunice Kennedy Shriver</i> National Institute on Child Health and Human Development
NIDCR	National Institute of Dental and Craniofacial Research
NIDDK	National Institute of Diabetes and Digestive and Kidney Diseases
NIDA	National Institute on Drug Abuse
NIEHS	National Institute of Environmental Health Sciences
NIFA	National Institute of Food and Agriculture

NIGMS	National Institute of General Medical Sciences
NIH	National Institutes of Health
NIMH	National Institute of Mental Health
NIMHD	National Institute on Minority Health and Health Disparities
NINDS	National Institute of Neurological Disorders and Stroke
NINR	National Institute of Nursing Research
NLM	National Library of Medicine
OBSSR	Office of Behavioral and Social Sciences Research
ODPHP	Office of Disease Prevention and Health Promotion
ODP	NIH Office of Disease Prevention
ODS	NIH Office of Dietary Supplements
PA	Program Announcement
PRCC	NIH Prevention Research Coordinating Committee
RFA	Request for Application
RFP	Request for Proposal
USDA	U.S. Department of Agriculture

APPENDIX F: LIST OF EMBEDDED LINKS AND CORRESPONDING URLS

HYPLERLINK NAME	URL
1977 National Agricultural Research, Extension, and Teaching Policy Act	http://www.csrees.usda.gov/about/offices/legis/pdfs/nar77.pdf
Age-Related Eye Disease Study (AREDS)	http://www.nei.nih.gov/amd/summary.asp
Age-Related Eye Disease Study 2 (AREDS2)	http://www.areds2.org/
American Recovery and Reinvestment Act (ARRA)	http://www.hhs.gov/recovery/overview/
Behavioral and Social Sciences Interest Group (BSSR-IG)	http://sigs.nih.gov/bssrig/Pages/default.aspx
Biomarkers of Nutrition for Development (BOND) Program	http://www.nichd.nih.gov/global_nutrition/programs/bond/
Breastfeeding and Human Lactation Research Scientific Interest Group (BALSIG)	http://sigs.nih.gov/breastfeeding/Pages/default.aspx
Center for Scientific Review (CSR)	http://www.nih.gov/about/almanac/organization/CSR.htm
Common Fund	http://commonfund.nih.gov/
Dietary Guidelines for Americans	http://health.gov/dietaryguidelines/
Division of Nutrition Research Coordination	http://www.dnrc.nih.gov/
Do you know the health risks of being overweight?	http://win.niddk.nih.gov/publications/health_risks.htm
Epidemiology and Clinical Trials Interest Group	http://sigs.nih.gov/epidemiology/Pages/default.aspx
Exercise Interest Group	http://sigs.nih.gov/exercise/Pages/default.aspx
Fogarty International Center (FIC)	http://www.fic.nih.gov/Pages/Default.aspx
Food Forum	http://www.iom.edu/Activities/Nutrition/FoodForum.aspx
Healthy People, 2020	http://www.healthypeople.gov/2020/default.aspx
Home Box Office (HBO) "The Weight of the Nation" series	http://theweightofthenation.hbo.com/
Human Microbiome Project	http://commonfund.nih.gov/hmp/
Human Nutrition Research Information Management (HNRIM)	http://hnrin.nih.gov/
January 13, 2005 NIH Guide Notice	http://grants.nih.gov/grants/guide/notice-files/NOT-OD-05-025.html
Metabolomics Scientific Interest Group	http://sigs.nih.gov/metabolomics
mHealth Inter-Institute Interest Group (mHealth IIG)	http://ppp.od.nih.gov/pppinfo/mhealth.asp
National Academies' Food and Nutrition Board	http://www.iom.edu/About-IOM/Leadership-Staff/Boards/Food-and-Nutrition-Board.aspx

National Cancer Institute (NCI)	http://www.cancer.gov
National Center for Complementary and Alternative Medicine (NCCAM)	http://www.nccam.nih.gov/
National Collaboration on Child Obesity Research (NCCOR)	http://nccor.org/
National Eye Institute (NEI)	http://www.nei.nih.gov/
National Food and Nutrient Analysis Program (NFNAP)	http://www.ars.usda.gov/Aboutus/docs.htm?docid=9446
National Heart, Lung, and Blood Institute (NHLBI)	http://www.nhlbi.nih.gov/
National Human Genome Research Institute (NHGRI)	http://www.genome.gov/
National Institute on Aging (NIA)	http://www.nia.nih.gov/
National Institute on Alcohol Abuse and Alcoholism (NIAAA)	http://www.niaaa.nih.gov/
National Institute of Allergy and Infectious Diseases (NIAID)	http://www.niaid.nih.gov
National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS)	http://www.niams.nih.gov/
National Institute of Child Health and Human Development (NICHD)	http://www.nichd.nih.gov/
National Institute on Deafness and Other Communication Disorders (NIDCD)	http://www.nidcd.nih.gov/
National Institute of Dental and Craniofacial Research (NIDCR)	http://www.nidcr.nih.gov/
National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK)	http://www2.niddk.nih.gov/
National Institute of Drug Abuse (NIDA)	http://www.drugabuse.gov/
National Institute of Environmental Health Sciences (NIEHS)	http://www.niehs.nih.gov/
National Institute of General Medical Sciences (NIGMS)	http://www.nigms.nih.gov/
National Institute of Mental Health (NIMH)	http://www.nimh.nih.gov/index.shtml
National Institute on Minority Health Disparities (NIMHD)	http://www.nimhd.nih.gov/
National Institute of Neurological Disorders and Stroke (NINDS)	http://www.ninds.nih.gov/
National Institute of Nursing Research (NINR)	http://www.ninr.nih.gov/
NIDCD's Strategic Plan for Research 2012-2016	http://www.nidcd.nih.gov/about/plans/2012-2016/Pages/2012-2016-Strategic-Plan.aspx
NIH Contracting Offices	http://oamp.od.nih.gov/
NIH Guide for Grants and Contracts	http://grants.nih.gov/grants/guide/index.html
NIH News Releases	http://www.nih.gov/news/index.html#releases
NIH Nutrition Coordinating Committee (NCC)	http://www.dnrc.nih.gov/committee.asp

NIH Nutrition Education Subcommittee (NES)	http://www.dnrc.nih.gov/committee-subcommittee.asp
NIH Nutrition Quarterly	http://www.dnrc.nih.gov/newsletter/
NIH Office of Behavioral and Social Sciences Research (OBSSR)	http://obsr.od.nih.gov/index.aspx
NIH Office of Disease Prevention (ODP)	http://prevention.nih.gov/
NIH VideoCasting and Podcasting	http://videocast.nih.gov/
Nutrition and Cancer Prevention Research Practicum	http://prevention.cancer.gov/newsandevents/events/20120312-16
Nutrition and Obesity Policy Research and Evaluation Network (NOPREN)	http://www.nopren.org/
Nutrition Obesity Research Centers (NORCs)	http://www.win.niddk.nih.gov/research/cnr.htm
Obesity Research Task Force	http://obesityresearch.nih.gov/about/
Office of Behavioral and Social Sciences Research (OBSSR)	http://www.obsr.od.nih.gov/
Office of Dietary Supplements (ODS)	http://ods.od.nih.gov/
Overweight and Obesity Statistics	http://win.niddk.nih.gov/statistics/index.htm#overweight
Polyunsaturated Lipid Function Interest Group	http://sigs.nih.gov/pufa
Prevention Research Centers (PRCs) program	http://www.cdc.gov/prc/
Prevention Research Coordinating Committee (PRCC)	http://prevention.nih.gov/prcc.aspx
Probiotic and Prebiotic Working Group (PPWG)	http://sigs.nih.gov/PPWG/Pages/default.aspx
Report of the Dietary Guidelines Advisory Committee (DGAC) on the Dietary Guidelines for Americans, 2010	http://www.cnpp.usda.gov/dgas2010-dgacreport.htm
Research, Condition, and Disease Categorization (RCDC)	http://report.nih.gov/rcdc/index.aspx
Science of Behavior Change Program	http://commonfund.nih.gov/behaviorchange/
<i>Sisters Together: Move More, Eat Better</i>	http://www.win.niddk.nih.gov/sisters/index.htm
Strategic Plan for NIH Obesity Research	http://www.obesityresearch.nih.gov/about/strategic-plan.aspx
Strategies to reduce sodium intake in the United States (IOM Report)	http://www.iom.edu/Reports/2010/Strategies-to-Reduce-Sodium-Intake-in-the-United-States.aspx
Surgeon General's 2011 Call to Action to Support Breastfeeding	http://www.surgeongeneral.gov/library/calls/breastfeeding/calltoactiontosupportbreastfeeding.pdf
The Mary Frances Picciano Dietary Supplement Research Practicum	http://odspracticum.od.nih.gov/
Videocast–Easy Tips on How to Reduce the Sodium in Your Favorite Recipes	http://videocast.nih.gov/summary.asp?Live=11097
Videocast –2012 Annual Advances in Cancer Prevention Lecture—Diet and Cancer: The Fourth Paradigm	http://videocast.nih.gov/summary.asp?Live=11425

Videocast –Communicating Nutrition Messages: Strategies for Diverse Audiences	http://videocast.nih.gov/summary.asp?Live=10107
Videocast –Dietary Sodium: Recommendations, Evidence, Challenges, and Applications for Clinical Guidance	http://videocast.nih.gov/summary.asp?Live=11422
Videocast –Dietary Supplements—What You Need to Know	http://videocast.nih.gov/summary.asp?Live=10064
Videocast–False Positives, False Negatives, and Small Effects: Genome, Exposome, and Nutrition	http://videocast.nih.gov/summary.asp?Live=10040
Videocast–Food for Thought: Mainstreaming Nutrition to Improve Child Health	http://videocast.nih.gov/summary.asp?Live=10997
Videocast–Is Curcumin the Spice of Life? A Look at Cancer Prevention Evidence	http://dcp.cancer.gov/files/webinar-20110517.wmv
Videocast–Joint NIH and USDA Workshop on Using Nanotechnology To Improve Nutrition Through Enhanced Bioavailability and Efficacy, Day 1	http://videocast.nih.gov/summary.asp?file=17003
Videocast–Joint NIH and USDA Workshop on Using Nanotechnology To Improve Nutrition Through Enhanced Bioavailability and Efficacy, Day 2	http://videocast.nih.gov/summary.asp?file=17004
Videocast–Novel Omega-3 Mediators & Mechanisms in the Resolution of Inflammation: What Can They Tell us About Preventive and Therapeutic Approaches?	http://videocast.nih.gov/Summary.asp?File=17172
Videocast–Promoting Equity through Engagement: Novel Strategies to Transform Communities into Epicenters of Health	http://videocast.nih.gov/summary.asp?Live=11096
Videocast–Vitamin D and Cancer Prevention: Shining Light on the Current Research	http://prevention.cancer.gov/files/webinar-20111202.wmv
Warren Grant Magnuson Clinical Center (CC)	http://clinicalcenter.nih.gov/
Weight-control Information Network (WIN)	http://win.niddk.nih.gov/
What is high blood pressure?	http://www.nhlbi.nih.gov/health/health-topics/topics/hbp/
WIN Notes	http://www.win.niddk.nih.gov/notes/index.htm
World Health Organization--Visual Impairment and Blindness, Fact Sheet	http://www.who.int/mediacentre/factsheets/fs282/en/index.htm